Stephen J. Joncus, OSB #013072
JONCUS LAW PC
13203 SE 172nd Ave Ste 166 #344
Happy Valley, Oregon 97086
971.236.1200
steve@joncus.net

Leonard W. Williamson, OSB #910020
VAN NESS WILLIAMSON LLP
960 Liberty St. SE, Ste 100
Salem, Oregon 97302
503.365.8800
l.williamson@vwllp.com

Attorneys for OFF Plaintiffs

UNITED STATES DISTRICT COURT
DISTRICT OF OREGON
PENDLETON DIVISION

OREGON FIREARMS FEDERATION, INC., et al., Plaintiffs, v. KATE BROWN, et al., Defendants.	Civil No. 2:22-cv-01815-IM (*Lead Case*) Civil No. 3:22-cv-01859-IM (*Trailing Case*) Civil No. 3:22-cv-01862-IM (*Trailing Case*) Civil No. 3:22-cv-01869-IM (*Trailing Case*) CONSOLIDATED CASES
MARK FITZ, et al., Plaintiffs, v. ELLEN F. ROSENBLUM, et al., Defendants.	**DECLARATION OF MICHAEL F. CARRICK**
KATERINA B. EYRE, et al., Plaintiffs, v. ELLEN F. ROSENBLUM, et al., Defendants.	

DANIEL AZZOPARDI, et al., Plaintiffs,
v.
ELLEN F. ROSENBLUM, et al., Defendants.

I, Michael F. Carrick, undersigned, declare as follows:

1. I have been asked to render an opinion on the Girardoni air rifle, its history and use by Meriweather Lewis on the Corp of Discovery between 1803 and 1806.

2. I have been retained to provide my opinion by the Plaintiffs in *Oregon Firearms Federation, Inc. et al v. Brown et al*, Case No. 22-CV-01815-IM and *Eyre et al v. Rosenblum et al*, Case No. 22-cv-01862-IM. I charge $375.00 per hour for professional services.

3. I have not been deposed or testified in any litigation challenging the constitutionality of the laws in Oregon or in any other State.

Background and Qualifications

4. I have attached my most current Curriculum Vitae marked **Exhibit Carrick -1**.

5. I have a lifetime of personal and professional experience studying firearms from the 18th and 19th centuries.

6. My backgrounds include the following relevant experience:

   a. **2020–present** Editor of Q&A firearms research column: NRA The American Rifleman magazine.

   b. **2010–2020** Editor of Q&A firearms research column: Arms Heritage magazine.

c. **2000–2010** Editor of Q&A firearms research column: The Gun Report magazine.

d. **1976–2000** Owner of Lightning Powder Co., Salem, OR, Manufacturer and distributor of Police Equipment. Sales in USA, and fifty foreign countries.

e. **1973–1976** Managing Director, Technipol International, Sales of Police Equipment worldwide. Foster City, CA.

f. **1968–1972** Manager of Firearms Dept., George F. Cake Corp, Berkeley, CA, Largest supplier of firearms to Police in USA.

g. **1964–1968** Manager of The San Francisco Gun Exchange, Retail firearms store.

h. I have a reference library of approximately 5,000 firearm reference books. I have a data base on my computer of approximately 100,000 line items of information gleaned from books in my library and from firearms magazines.

i. I am a certified Technical Advisor to the law enforcement ASSOCIATION OF FIREARM AND TOOL MARK EXAMINERS (AFTE).

j. I am a Life Benefactor member of the National Rifle Association.

k. I am a member of The American Society of Arms Collectors, a limited membership, by invitation only, for serious arms collectors who have published scholarly articles.

l. I am a member of the Oregon Arms Collectors.

m. I am a member of Board of Directors, Winchester Collectors of America.

n. I am a member of the Lewis & Clark Trail Heritage Foundation, Past President of the Oregon Chapter, and host for the National Bicentennial Conference held at Lewis & Clark College 2004.

7. I have had a collection of every type of firearm carried on the Lewis and Clark expedition 1803–1806. In November 2022, I donated all of these weapons, including my original Girardoni 20-shot repeating air rifle, to the National Park Service, Fort Clatsop, Astoria, Oregon.

8. The Girardoni Air rifle was designed by Bartolomeo Girardoni in 1779. The Girardoni fired a .46 caliber lead ball weighing roughly 153 grains using compressed air, in the detachable buttstock of the rifle that also served as a compressed air reservoir, at between 400 to 500 feet per second. The buttstock air reservoir was pressurized by means of a hand pump, much like a bicycle hand pump, to about 800 psi. Once the reservoir was pressurized it could easily fire up to forty times without needing to be re-charged. The Girardoni was a breech loading rifle fed by a tubular magazine running parallel to the barrel. The barrel itself was rifled to make it more accurate. The rifle's magazine held 20 rounds of ball ammo. My research indicates that the rifle would have been supplied from the factory in a kit. The kit came with four additional tubes that held up to 22 rounds for the rifle and performed similar to what we now call a speed loader for quickly reloading the rifle. Two additional air reservoirs would have been stored in the kit along with a bullet mold and ladle for casting additional bullets.

9. Earlier, I donated another original Girardoni repeating air rifle to the National Firearms Museum in Virginia. The curator made a video of the use of this rifle in America, using my air rifle in the presentation. In the last twelve years it has been viewed over 4.5

million times. The rifle I donated, and the history of the rifle can be viewed here: (15) NFM Treasure Gun - Girardoni Air Rifle as Used by Lewis and Clark - YouTube

10. A second video was created by the Association of Firearms and Tool Mark Examiners (AFTE) of one of Girardoni air rifles I owned for a presentation to AFTE in 2014. That video can be viewed here: (15) Girardoni Air Gun (original 1780 example) - YouTube

11. I am the researcher who discovered that Meriwether Lewis carried a repeating 20-shot powerful air rifle on the 1803–1806 expedition to the west coast of the American continent.[1] Prior to my discovery, it was thought that Lewis carried a single-shot air rifle. He mentions it a score of times in the Journals but does not explain clearly that it is a repeating firearm. For the purposes of my research, I have read all of the Journals of the Lewis and Clark expedition journalists as published in Gary Moulton's 13 volume set.

12. My first description of the discovery that Lewis carried an Austrian Model 1780 repeating air rifle was published in the Lewis & Clark Trail Heritage Foundation Official Publication We Proceeded On, November 2002, pp 15–21. *See* **Exhibit Carrick –2.**

13. President Jefferson had commissioned Thomas Rodney, a retired Justice of the Supreme Court of the State of Delaware to journey to the Mississippi territory and apprise Jefferson of the state of law in the area. Col. Rodney was a prolific journal keeper and wrote in detail of every interesting thing he saw. (Smith & Swick, eds. A Journey Through the West—Thomas Rodney's 1803 Journal from Delaware to the Mississippi Territory). On October 17, 1803, he was proceeding down the Ohio river. He docked in Wheeling, Virginia

[1] *See* attached article by Stuart Wier "The Firearms of the Lewis and Clark Expedition at pp. 7 – 8 footnotes 30, 31, 32 and 35 marked **Exhibit Carrick – 3**. Wier also published a similar article in Lewis & Clark Trail Heritage Foundation Official Publication We Proceeded On, May 2002 pp. 10 – 19. **See Exhibit Carrick – 5**.

(now West Virginia) and noticed an interesting keel boat at the dock. He visited the Captain of that boat and wrote that it was a Captain Meriwether Lewis, and that Lewis was taking his keel boat down to St. Louis after having picked it up from the builder in Pittsburgh. He wrote of having a glass of wine that night, Oct 17th, and then meeting Lewis the next day to see Lewis shoot an amazing repeating air rifle. I immediately turned to October 17th in Lewis' journals and found Lewis' entry that he indeed had a glass of wine with Capt. Rodney that night. Rodney described the air rifle in great detail, and I immediately recognized that it had to be a Girardoni repeating air rifle as there were no others of the described features in existence in 1803.

14. Philip Schreier, curator of the National Firearms Museum in Virginia, also authored a paper titled "A Brief History of the Airgun of Meriwether Lewis and the Corps of Discovery" citing to my work. *See* attached **Exhibit Carrick – 4.**

15. After I published this discovery in, We Proceeded On, November 2002, I continued to research the details and published an advanced article in "The Gun Report" magazine January 2003, pp 28–36. *See* attached **Exhibit Carrick – 7.**

16. The Girardoni repeating air rifle was designed for the Austro-Hungarian Army, and the first 500 were purchased in 1780. Further orders brought their inventory to 1500 rifles. They never sold any of these military rifles, but they did record losing over 300 of them in several battles their army participated in. It is presumed that Lewis acquired his air rifle from a French immigrant, Blaze Cenas, he was acquainted with in the Masons while waiting in Pittsburgh several weeks for his keelboat to be finished building.

17. On the very first page of Lewis' published account in the Journals, August 1803, he states that he had picked up the gun in Pittsburgh when the Keel Boat is finished

construction. He sails about six miles, stops on an island to say goodbye to his Masonic friends, demonstrates the rapid shooting of the air rifle, and a friend, Blaze Cenas, asks to look at it and he "being unacquainted with its operation" causes it to discharge accidentally, the ball creases the forehead of a female bystander about ¼ of its ball width, and she falls to the ground with blood gushing. She recovers, and Lewis leaves for his downriver trip. *See* attached copy of this page marked **Exhibit Carrick – 6**.

18. During the cross-country expedition, Meriwether Lewis mentions a few times he puts on a shooting demonstration to "astonish the Indians." Anyone in America in 1803 would be astonished to see a rifle that could fire 20 projectiles in one minute without reloading!

19. Near the end of the trip, on the way home, summer of 1806, he is hunting elk, and while stalking a wounded animal, someone shoots Lewis through the buttocks (an entrance hole, an exit hole, an entrance hole, an exit hole). Lewis thinks his hunting partner shot him, but not finding him, Lewis thinks an Indian must have shot him.

20. Lewis hobbles to his canoe and determines to defend his life to the end with his rifle, his pistols, and his air rifle. I'm not surprised he had the air rifle with him—he must have considered it would be a fine gun for self-protection. With his pistol and his hunting rifle he would have the capacity to fire only two quick shots if his life were in danger.

21. It turns out his hunting partner shot him by accident. My point in mentioning this particular incident is that Lewis had enough faith in his air rifle to use it to defend his life.

I hereby declare that the above statements are true to the best of my knowledge and belief, and that I understand it is made for use as evidence in court and is subject to penalty for perjury.

Dated this 8 day of March, 2023.

Michael Carrick

Michael F. Carrick

CERTIFICATE OF SERVICE

I hereby certify that on March 8, 2023, I caused the foregoing to be filed with the Clerk of the Court using the ECF system, which will provide electronic copies to counsel of record.

In addition, the foregoing was served by email as follows:

Brian Simmonds Marshall, OSB No. 196129
Senior Assistant Attorney General
OREGON DEPARTMENT OF JUSTICE
100 SW Market Street
Portland, OR 97201
Phone: (971) 673-1880
E-mail: brian.s.marshall@doj.state.or.us

Harry B. Wilson, OSB No. 077214
MARKOWITZ HERBOLD PC
1455 SW Broadway
Suite 1900
Portland, OR 97201
Phone: (503) 295-3085
Email: harrywilson@markowitzherbold.com
Attorneys for Defendants

VAN NESS WILLIAMSON LLP

/s/ Leonard W. Williamson
Leonard W. Williamson, OSB No. 910020
l.williamson@vwllp.com

Attorney for Plaintiffs

EXHIBIT CARRICK-1

Michael F. Carrick

Curriculum Vitae

2020–present Editor of Q&A firearms research column: NRA *The American Rifleman* magazine

2010–2020 Editor of Q&A firearms research column: *Arms Heritage* magazine

2000–2010 Editor of Q&A firearms research column: *The Gun Report* magazine

1976–2000 Owner of Lightning Powder Co., Salem, OR, Manufacturer and distributor of Police Equipment. Sales in USA, and fifty foreign countries

1973–1976 Managing Director, Technipol International, Sales of Police Equipment worldwide. Foster City, CA

1968–1972 Manager of Firearms Dept., George F. Cake Corp, Berkeley, CA
Largest supplier of firearms to Police in USA

1964–1968 Manager of The San Francisco Gun Exchange, Retail firearms store

I have a reference library of approximately 5,000 firearm reference books. I have a data base on my computer of approximately 100,000 line items of information gleaned from books in my library and from firearms magazines.

I am a certified Technical Advisor to the law enforcement ASSOCIATION OF FIREARM AND TOOL MARK EXAMINERS (AFTE)

I am a Life Benefactor member of the National Rifle Association

I am a member of The American Society of Arms Collectors, a limited-membership, by invitation only, for serious arms collectors who have published scholarly articles.

I am a member of the Oregon Arms Collectors

I am a member of Board of Directors, Winchester Collectors of America.

I am a member of the Lewis & Clark Trail Heritage Foundation, Past President of the Oregon Chapter, and host for the National Bicentennial Conference held at Lewis & Clark College 2004. I have published articles that the Heritage Foundation maintains on its web page and can be found here: https://lewis-clark.org/contributors/michael-carrick/

I have had a collection of every type of firearm carried on the Lewis Clark expedition 1803–1806. In November 2022, I donated all of these weapons, including my original Girardoni 20-shot repeating air rifle, to the National Park Service, Fort Clatsop, Astoria, Oregon.

1. Earlier, I donated another original Girardoni repeating air rifle to the National Firearms Museum in Virginia. The curator made a video of the use of this rifle in America, using my air rifle in the presentation. In the last twelve years it has been viewed over 4.5 million times. See: (15) NFM Treasure Gun - Girandoni Air Rifle as Used by Lewis and Clark - YouTube

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My first description of the discovery that Lewis carried an Austrian Model 1780 repeating air rifle was published in the Lewis & Clark Trail Heritage Foundation Official Publication *We Proceeded On,* November 2002, pp 15–21.

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EXHIBIT CARRICK-2

White House Ceremony — New Leadership — 2002 Awards — ATVs on Lolo Trail

We Proceeded On

Lewis and Clark Trail Heritage Foundation / www.lewisandclark.org November 2002 Volume 28, No. 4

Tales of the Variegated Bear

The Corps of Discovery's adventures with grizzlies

Plus: Lewis's air gun: single shot or repeater?
The "true" source of the Missouri
Hair and beards on the trail

Contents

On the cover
John F. Clymer's painting *Hasty Retreat* dramatically depicts one of the many encounters between members of the Corps of Discovery and grizzly bears on the upper Missouri. For more on the explorers' travails with the variegated bear, see Kenneth Walcheck's article beginning on page 8 and the review of Paul Schullery's new book on page 34. Courtesy Doris Clymer and The Clymer Museum of Art.

Grizzlies, p. 8

Gunmaker Isaiah Lukens, p. 15

Hair and beards, p. 22

We Proceeded On

November 2002 • Volume 28, Number 4

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E. G. Chuinard, M.D., *Founder*

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Editor
J. I. Merritt
51 N. Main Street
Pennington, NJ 08534
609-818-0168
wpo@lewisandclark.org

Art Direction
Margaret Davis Design
Princeton, New Jersey

Printed by James-Allan Printing & Design, West Conshohocken, Pennsylvania

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We Proceeded On, the quarterly magazine of the Foundation, is mailed to current members in February, May, August, and November.

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Jefferson Club $250
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Leadership Club $2,500

The Lewis and Clark Trail Heritage Foundation, Inc. is a tax-exempt nonprofit corporation. Individual membership dues are not tax deductible. The portion of premium dues over $40 is tax deductible.

Bad River encounter; Crimson Bluffs

I must take issue with parts of Dr. James Ronda's article "Tough Times at the Bad" (WPO, May 2002).

The article is about the Teton (Lakota) Sioux. As sources for this article and for his account of the Bad River encounter in his 1984 book, *Lewis and Clark among the Indians*, Ronda relies mainly on the explorers' journals, other contemporary writings by white traders, and articles by modern scholars. Missing, apparently, are oral histories handed down by the Teton Sioux themselves. In the absence of such sources, much of what he has to say about the Indians' attitudes, motivations, and politics remains speculative.

I also question Ronda's view that the captains didn't know what they were doing during this episode and came off badly as a result. He writes, for example, that "Compared to these Lakotas, Lewis and Clark were country boys in the hands of real sharpies." It seems to me, however, that it was Clark who gained the most by not backing down, by not giving in as Black Buffalo did, and by not allowing the Sioux to control the situation.

Ronda would have us believe that Lewis and Clark were dunces who bumbled and stumbled through their adventure with no idea about the world they entered. This may be true to some extent, but it is also true that the Corps of Discovery met dozens of tribes representing many languages and cultures, and in the vast majority of those encounters the explorers succeeded in fostering remarkable relationships. Much of the credit goes to the friendliness of the Indians themselves, but Lewis and Clark and the American ideals they represented also deserve credit. Few explorers fared as well.

Finally, I dispute Ronda's assertion that in 1804, "the politics of the northern Great Plains was every bit as complex as the politics of Washington, D.C." This statement is apologia, not scholarship. How could the politics of Plains Indians, numbering in the tens of thousands, possibly be as complex as those of a new and evolving democracy of 5.5 million people? I know that the tribes, threatened by white encroachment, were dealing with many pressing matters in a rapidly changing context. But on the banks of the Potomac, Lewis's mentor, Thomas Jefferson, was fighting Barbary pirates and trying to avoid war with Great Britain, the era's superpower, while also dealing with party politics, judicial review, westward expansion, slavery, federalism versus states rights, and many other heated issues of the day.

SAM BLOBERG
Evergreen, Colo.

The Crimson Bluffs

Missouri River site dedicated

As president of the Crimson Bluffs Chapter I want to thank WPO for its coverage of our successful efforts to protect the Crimson Bluffs, a Land and Clark landmark on the upper Missouri (L&C Roundup, May 2002).

Readers may be interested to know that we dedicated the 50-acre site on July 27. Undaunted by rain, approximately 150 people from Broadwater County and other parts of Montana arrived under cloudy skies to take part in the commemoration and to view the "remarkable bluff of a crimson coloured earth," as Lewis described it on July 24, 1805. Enhancing the festivities were a bald eagle and a flight of white pelicans gliding over the river.

Today, the Crimson Bluffs are as beautiful as they were when the Corps of Discovery passed them nearly 200 years ago, and now that they are in public ownership they will remain in a pristine state for future generations. We are grateful to everyone who helped us celebrate this special occasion.

ROSE OLESON
Townsend, Mont.

WPO welcomes letters. We may edit them for length, accuracy, clarity, and civility. Send them to us c/o Editor, WPO, 51 N. Main St., Pennington, NJ 08534 (e-mail: wpo@lewisandclark.org).

Spreading the word in Two Med country

I just spent the evening with a wonderful group from the Phoenix, Arizona, area. They come every year to spend a peaceful week at Rising Wolf, a guest ranch on the south fork of Two Medicine River owned by our old friends Jim and Patti Stewart. Jim and I have talked around the ranch's dinner table on many a long evening about my long love affair with the story of Lewis and Clark, my work with the Foundation, and my participation in the upcoming L&C Bicentennial. When he asked if I'd mind taking these folks on a tour of "Two Med" country and the site of Camp Disappointment, where Meriwether Lewis had his fateful encounter with a group of Indians (either Blackfeet or Gros Ventres of the Prairie), I jumped at the chance.

My interaction with Jim and Patti's guests brings into focus what so many members of the Lewis and Clark Trail Heritage Foundation do routinely as "keepers of the story and stewards of the trail." To prepare them for our visit to the Fight Site I made sure they had copies of Lewis's journal entries for those critical days of July 1806 and had seen the August issue of WPO with Bob Saindon's article about that "unhappy affair." Several of them had already read Stephen Ambrose's *Undaunted Courage*, and one was immersed in Jim Ronda's seminal *Lewis and Clark among the Indians*.

The copies of WPO I left at the ranch piqued their interest in the Foundation and gave me an opportunity to encourage them to join both our national organization and the Grand Canyon Chapter. I'm confident that some of them will follow through, do more reading about the expedition, and get involved in the L&C Bicentennial. I wouldn't be surprised to see a few show up at Monticello for the bicentennial kickoff in January or in Philadelphia next August for the Foundation's annual meeting.

Their visit also presented the opportunity to talk about tribal relations and the good work being done by the Bicentennial Council's Council of Tribal Advisors (COTA) to ensure that tribal lands and cultures along the L&C Trail are respected. I made a point of reminding them that the entire evening of our tour was spent on the Blackfeet Reservation. In addition to exploring the Fight Site we looked at tipi rings and a pushkin (buffalo jump). We also talked about the critical importance of maintaining good relations with the tribal members and the ranchers whose property we crossed to get to these sites.

Taking the message to others

It was the kind of evening that is surely repeated nearly every day somewhere along the Lewis and Clark Trail—a telling of the story and a primer on stewardship, landowner and tribal relations, and the need to protect our priceless heritage. Foundation members from Charlottesville and Philadelphia to Astoria and all points between know exactly how it feels to carry our story and message to others.

I'm happy to report that, without further prompting from me, our new friends from Arizona wanted to know more about the Foundation and asked for membership brochures. We had a wonderful time, just as I know all of you do whenever you're involved in this kind of experience in which everyone learns and grows. So from way up here in the heart of Blackfeet country, Thank you for all you are doing to expand and preserve the legacy of Lewis and Clark. Proceed on!

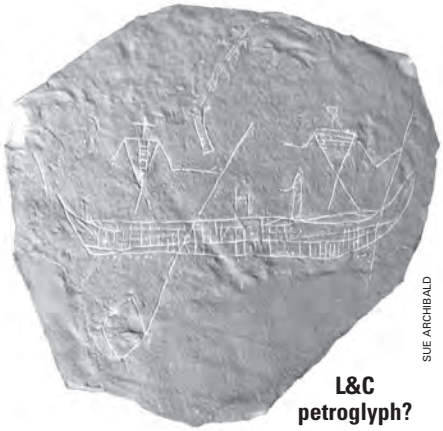
—Larry Epstein
President, LCTHF

Lewis and Clark from different perspectives

A jagged-edged rock art reproduction hangs on the hallway wall in my St. Louis home. It was made from a latex mold applied to a petroglyph on the face of a cliff on the plains of Montana. An old friend gave it to me years ago. Although native people incised the original, the subject matter is not Indian. Instead, the image is a boat with uplifted prows at both ends, apparently constructed of planks, with two people holding oars and standing at either end. The image includes a rifle and a larger gun resting upright in the boat. Comparative dating from the site suggests that the petroglyph was made about the time the Corps of Discovery passed through Montana. While no conclusive evidence exists, it is possible that the image is an American Indian depiction of Lewis and Clark. I like to think so.

At the White House event hosted by President and Mrs. Bush on July 3, Nez Perce Tribal Chairman Sam Penny spoke of Nez Perce tribal traditions about the Corps of Discovery. As I listened to him, I thought of my petroglyph reproduction. People who are not Native Americans see Lewis and Clark from an eastern perspective even if they live in the west. Lewis and Clark were going "out there." But the viewpoints of the unknown petroglyph inscriber and Sam Penny are distinctly different because the artist and the tribal chairman have different cultural and geographic vantagepoints. If the West was your home before Lewis and Clark struggled upriver, then the Corps of Discovery was coming, not going; arriving, not departing; and its members were wayfaring suspect strangers in your land rather than representatives of your country, your culture, and future's destiny. These are startlingly different perspectives on the same events, facts, and people. Good people can make different meanings of past events and both can be correct. It depends on where you stand and who your people are.

Implicit in this idea is one of the



SUE ARCHIBALD

L&C petroglyph?

powerful messages of the L&C Bicentennial commemoration. These observances can be an opportunity to reflect upon the Corps of Discovery from multiple perspectives and embrace the beautiful tapestry that is America's heritage, and to acknowledge that all Americans count and different stories must be told and heard. It is also time to reflect upon the land traversed and described by the corps, for the land and the people who live upon it are our most precious legacy and our priceless gift to future generations. The land and its rivers and animals have changed in 200 years. Are we pleased with the changes that we and our predecessors have wrought, or is it time to contemplate course corrections that will comprise the legacy we will leave to the young and to those yet born? This bicentennial can be an opportunity to reaffirm what is best and good in our past, strengthening both our sense of identity and common purpose. But just as importantly, it is also a chance to acknowledge the burdens of the past and to make those changes in our own time that will guarantee the ingredients of a good life for those who come after us. Doing this, we more perfectly fulfill our obligations as the living generation to leave our places better than we found them by being conscientious trustees and thoughtful stewards of our legacies.

Council changes

You may all be aware that the Bicentennial Council faces severe and immediate financial challenges. We have reduced our operating costs, moved our offices to St. Louis, and are operating with a volunteer staff based at the Missouri Historical Society. Despite our austerity, the opportunities remain. The National Advertising Council has adopted the Lewis and Clark Bicentennial as its pro bono campaign, a decision that will result in tens of millions of dollars of free educational media buys. We remain committed to securing the corporate sponsorships that will underwrite Corps of Discovery II, which will debut during the signature event at Monticello in January. We will maintain the Council's Web site and plan to expand it into a portal to all Lewis and Clark information on the Web. While we have dramatically reduced our costs, we have not reduced our essential activity.

As a historian, I know that all work rests on foundations built by others. I am deeply grateful to the council's past president, David Borlaug, members of the council's board of directors, the former staff of the council, and to the unwavering support of the Lewis and Clark Trail Heritage Foundation. Without them there would be no place to begin. Collectively, the readers of WPO are a vast reservoir of enthusiasm, ideas, and support for the proposition that through this commemoration we provide for all Americans an opportunity to reflect upon a remarkable past, explore a magnificent land, and contemplate a future that we will make together. I need your ideas, support, and involvement. Please call, write, or e-mail me or Karen Goering, interim executive director of the Bicentennial Council.

—Robert R. Archibald

Bob Archibald (rra@mohistory.org), the new president of the Bicentnnial Council, is president of the Missouri Historical Society (MHS). Both he and Karen Goering can be reached care of MHS, P.O. Box 11940, St. Louis, MO 63112.

Jefferson West ad

Eyes and ears along the Lewis and Clark Trail

The snow lies deep on Packer Meadow, protecting for much of the year one of the most pristine sites along the Lewis and Clark National Historic Trail. In winter, at least, it's safe from abuse by all-terrain vehicles (ATVs) of the sort that occurred one day last summer.

Packer Meadow is a beautiful example of a wet camas meadow. Lewis and Clark camped two miles down Glade Creek on the night of September 13, 1805, and wrote about it in their journals. They returned to the area on June 29, 1806, where it merited a second mention by Clark: "here is a pretty little plain of about 50 acres plentifully Stocked with quawmash [camas] and from appearance this forms one of the principal Stages of the indians who pass the mountains on this road."

COURTESY KATHY LLOYD

ATV riders on a run through Packer Meadow last August.

On the afternoon of last August 17, Kathy Lloyd and other members of the Montana Native Plant Society were preparing for an Elderhostel class on the plants of the Lewis and Clark Expedition. As she recalls, "After a pleasant day identifying plants in the meadow and reading from the Lewis and Clark journals, we were preparing to leave when two ATVs roared by us and traveled down the middle of the wet meadow, disappearing up a side drainage. They reappeared, again tearing down the center of the meadow."

Thinking quickly, members of the group snapped photos of the ATVs in action. "They were great photos," said Joni Packard, the U.S. Forest Service district ranger at nearby Powell Ranger Station, "but I wish they would have called us right away. We're just 20 minutes away and might have been able to get someone up there and apprehend the people who did this."

Fortunately, said Packard, the damage to the meadow caused by the ATVs wasn't too bad. "It wasn't dug up or churned up." Less fortunately, despite the photos the drivers couldn't be identified—they were wearing helmets, and their ATVs didn't have license plates. When Lloyd and her crew checked the area they found no trailers or other rigs for transporting ATVs.

"We were shocked and upset by this wanton disregard for a priceless natural and historic landmark," said Lloyd. "ATV use is never appropriate in a wet meadow and is certainly not to be condoned in a place bearing such historical, cultural, and natural values." Packard concurred. "This area is closed to motorized use," he said, adding that signs declaring the area off limits had been pulled down or otherwise vandalized but will be replaced.

Prompt reporting is key

The incident happened on a Sunday afternoon. "Even so," said Packard, "people should still call us right away. Even if they just call 911, the sheriff's department can dispatch our officers or respond to the call themselves. Visitors to the trail are our eyes and ears when we don't have law enforcement officers in the immediate area. We need their help." It's especially important that eye witnesses immediately report vandalism or other violations or desecrations. Forest Service investigators believe it was in September 2001 that vandals struck at the Smoking Place, on Motorway 500 of the Lolo Trail. In that case, rock cairns built over many generations by the Nez Perces were destroyed. There were no witnesses, and the case remains unsolved.

Idaho author Jim Fazio calls Packer Meadow one of his favorite Lewis and Clark sites, and he's understandably disheartened at the news of the ATV vandalism: "Packer Meadow is one of those wonderful places where you can stand and easily envision the expedition passing through. Fortunately or unfortunately, it is also one that is easily accessible to motor traffic. Until now, it has been respected by everyone and has lasted into the 21st century without damage—despite use by hikers, hunters, horseback riders, and Native Americans digging camas roots. I'm grieved to learn that ATV riders would have such disrespect for a special place that they couldn't control themselves and stay on the road."

There are few sites along the L&C Trail that give visitors a sense of place similar to what the captains might have experienced 200 years ago. Packer Meadow is one of them, and while it would be satisfying to apprehend the vandals of August, it's our job to educate the traveling public and our friends and neighbors about the need to respect the trail and keep off sensitive and fragile sites. As Packard points out, we are indeed the eyes and the ears of the Forest Service—and of the National Park Service, the Bureau of Land Management, the U.S. Fish and Wildlife Service, and other land-management agencies charged with protecting the trail. If you witness an act of vandalism or other crime on the Trail, call the nearest ranger station or 911.

—Jeff Olson
Trail Coordinator

Jeff Olson can be reached at trail@lewisandclark.org (P.O. Box 2376, Bismarck, ND 58502; Tel.: 701-258-1809.

St, Joseph's Visitor's Center
1 P B&W
Pick-up from 8/02

Tales of the Variegated Bear

Lewis and Clark scoffed at the Mandans' reports of its ferocity — until they tangled with the "turrible" beast on the high Missouri

by Kenneth C. Walcheck

When the Corps of Discovery arrived there two centuries ago, the Missouri near present-day Great Falls, Montana, was a wild boulder-strewn river cascading over rapids and five falls and surging through a landscape teeming with elk, bison, and antelope. Its willow and cottonwood bottomlands were also home to numerous grizzly bears.

It was at the Great Falls of the Missouri on June 14, 1805, that Meriwether Lewis, well ahead of the rest of the party, came face to face with a grizzly. The captain had just shot a buffalo and was waiting for it to die when he noticed the bear lumbering toward him just 20 paces away. Violating a cardinal rule of wilderness travel, Lewis had neglected to reload immediately so was holding an empty rifle. To his dismay he noticed there wasn't a tree within 300 yards nor any depression in which he might conceal himself while recharging his gun. His only usable weapon was his espontoon, a walking staff with an iron spike. Lewis began to retreat, but he had hardly moved when the bear charged at him "open mouthed and [at] full speed." Lewis sprinted 80 yards to the river and plunged into the waist-deep water, then turned and "presented the point of my espontoon" toward the bear as it pulled up at the water's edge.

Then, to Lewis's amazement and relief, as suddenly as it had charged the bear turned tail and galloped off across the open plain. Lewis later wrote that "the cause of his allarm still remains with me misterious and unaccountable … I feelt myself not a little gratifyed that he had declined the combat."[1]

This was neither the first nor the last encounter Lewis and his fellow explorers would have with this largest and most feared of North American predators during their 28 months on the trail. The vast majority of sightings took place along the game-rich upper Missouri. As Lewis noted, the grizzlies "lie in [wait] at the crossing places" of elk and bison, where they were especially vulnerable to attack.[2] The biggest concentration occurred at the Great Falls:

> As the buffaloe generally go in large herds to water and the passages to the river about the falls are narrow and steep the hinder part of the herd press those in front out of their debth and the water instatly takes them over the cataracts where they are instantly crushed to death without the possibility of escaping. in this manner I have seen ten or a douzen disappear in a few minutes. their mangled carcases ly along the shores below the falls in considerable quantities and afford fine amusement for the bear wolves

"Saw a large brown bear. … he took the River and was near catching the Man he chased in … one of the hunters Shot him in the head."
— John Ordway, May 14, 1805, near the mouth of the Musselshell River.

> and birds of prey; this may be one reason and I think not a bad one either that the bear are so tenacious of their right of soil in this neighbourhood.[3]

Grizzlies were so numerous and aggressive at the Great Falls that bear alertness became a preoccupation. The captains ordered the men to sleep with their guns close at hand and forbade them to venture alone along the river. Seaman, Lewis's Newfoundland dog, did his part by barking whenever a bear came near camp.

During the previous winter the Mandans and Hidatsa had told the captains that the buffalo country abruptly ended beyond the Great Falls. Without bison to feed on, the ranks of bears also thinned considerably. Once the explorers left the Falls they encountered only four other grizzlies along the river.[4]

FROM THE QUADRUPEDS OF NORTH AMERICA (1849)

John James Audubon visited the upper Missouri some 40 years after Lewis and Clark. His portrait of male and female grizzlies shows them in a docile mode.

Grizzly origins and early accounts

The grizzly evolved in Siberia and passed from Asia into North America across the Bering Land Bridge during the last ice age. Spreading south, it eventually occupied a swath of territory from Alaska to central Mexico and from California to Minnesota. Evolution on the cold, open, windswept tundra favored size and ferocity (a big body is better at holding heat, and an aggressive nature comes in handy when there is no place to hide). As nature writer Thomas McNamee puts it, "The American grizzly's ancestors were the biggest, meanest specimens Eurasia had to offer."[5]

Like its smaller cousin, the black bear, the grizzly is omnivorous—in addition to meat killed or scavenged it eats fish and also berries, roots, and other vegetation. A typical adult weighs 500 pounds, but despite its bulk it can run in bursts of well over 30 m.p.h. and at a sustained clip exceeding 20.[6]

Grizzlies appear in the literature of exploration beginning in 1666, when the French missionary Claude Jean Allouez mentioned Indian accounts of man-eating bears "of frightful size, all red, and with prodigiously long claws."[7] In the two decades before Lewis and Clark set out for the Pacific, the Canadian fur traders Alexander Mackenzie and Alexander Henry noted the grizzly's presence, respectively, along Peace River, in present-day Alberta, and in the Red River valley of North Dakota.[8] But it remained for Meriwether Lewis—he of the observant eye and active pen—to provide the wealth of detail that would lead to the formal scientific description supplied by Philadelphia naturalist George Ord in 1815. Ord gave the grizzly its Latin moniker *Ursus horribilis*, "horrible bear." Much later, taxonomists would lump together the grizzly and the larger, but closely related, Alaskan brown bear and Eurasian brown bear under the species name *Ursus arctos*, but Ord's evocative label survives in the grizzly's subspecies designation, *Ursus arctos horribilis*.[9]

Individual grizzlies vary markedly in color according to age, sex, and locality. In their journals, Lewis and Clark described bears as white, brown, gray, red, yellow, black, or grizzly (variously spelled and meaning gray or grizzled). Lewis wondered if the bear's myriad color phases represented as many as 20 separate species. Ultimately he concluded they were a single species, an insight that came to him on May 14, 1806, while waiting in a Nez Perce camp for snows to melt in the Bitterroots. Perhaps, he wrote, "it would not be unappropriate to designate them the variagated bear."[10]

A "turrible" animal

The Corps of Discovery's first encounter with the variegated bear took place on October 20, 1804, on the Missouri near the mouth of Heart River, North Dakota, as the explorers were nearing the Mandan villages. The one-eyed boatman, Pierre Cruzatte, wounded a grizzly, or "white bear," as Lewis recorded, and "being alarmed at the formidable appearance of the bear" took off, dropping his gun and tomahawk. Upon retrieving these items Cruzatte "found that the bear had taken the oposite

LEWIS & CLARK GRIZZLY ENCOUNTERS: KILLED, WOUNDED, SIGHTED

k = killed / w = wounded / s = sighted

OUTBOUND

Vol./pg.[1]	Date	Count	Breakdown
3:186	10.20.04	1	1 w (North Dakota)[2]
4:36	4.14.05	2	2 s
4:81	4.28.05	4	3 s, 1 w (Montana)
4:84	4.29.05	2	1 k, 1 w
4:113	5.5.05	1	1 k
4:118	5.6.05	1	1 s
4:141	5.11.05	1	1 k
4:149	5.13.05	1	1 w
4:151	5.14.05	2	1 k, 1 w
4:159	5.17.05	1	1 k
4:166	5.19.05	1	1 k
4:180	5.22.05		
4:184	5.23.05	6	1 k, 5 s[3]
4:213	5.28.05	1	1 s
4:242	6.2.05	2	2 k[4]
4:255-6	6.4.05	3	1 w, 2 s
4:259	6.5.05	3	3 k
4:280	6.12.05	2	2 k
4:292	6.14.05	1	1 s
4:305	6.17.05	1	1 s
4:308	6.18.05	1	1 s
4:331	6.25.05	3	3 s
4:336	6.27.05	4	3 k,[5] 1 s
4:338	6.28.05	2	2 s
4:354	7.2.05	3	1 k , 2 s[6]
4:423	7.24.05	1	1 s
4:426	7.25.05	1	1 s
4:431	7.26.05	2	2 k
5:28	8.1.05[7]	1	1 s
Subtotals, outward		54	20 k, 6 w, 28 s

HOMEWARD BOUND, L&C TOGETHER

7:256	5.14.06	2	2 k (Idaho)
7:264	5.16.06	3	3 w
7:267	5.17.06	1	1 k

LEWIS (MISSOURI RIVER)

8:25	6.15.06	2	2 s[8] (Montana)
8:99	7.10.06	1	1 s
8:110	7.15.06	2	2 s[9]
8:111	7.16.06	2	2 s
8:141	7.30.06	1	1 k
8:144	8.1.06	2	2 k
8:146	8.3.06	1	1 s
8:147	8.4.06	1	1 k
8:148	8.5.06	5	2 k, 3 s[10]
8:149	8.6.06	3	3 s[11]
8:150	8.7.06	8	8 s[12] (North Dakota)
8:154	8.11.06	1	1 s

CLARK (YELLOWSTONE RIVER)

8:162	7.3.06	1	1 s (Montana)
8:179	7.13.06	1	1 k
8:190	7.16.06	2	2 s
8:205	7.19.06	2	2 w
8:208	7.20.06	1	1 s
8:253	7.30.06	1	1 s
8:259	7.31.06	1	1 s
8:272	8.2.06	2	1 k, 1 w
8:281	8.5.06	1	1 k (North Dakota)
8:282	8.6.06	1	1 w
8:283	8.7.08	1	1 s
Subtotals, homeward		49	12 k, 7 w, 30 s
GRAND TOTALS		103	32 k,[13] 13 w, 58 s

NOTES

1 Volume and page references are for Moulton, *Journals of the Lewis & Clark Expedition*, Volumes 3, 4, and 5. Single references are generally for the first page of the first entry. (Most bear encounters are described by more than one journal keeper.)

2 The explorers encountered grizzly tracks on October 7, 1804 in South Dakota (Moulton, 3:148), and again on April 13, 1805, in North Dakota (4:31).

3 Although counted separately, the bear reported killed may have been one of the five sighted.

4 His syntax is confusing, but Lewis appears to be talking about two bears killed—one by him and the other by Drouillard.

5 Clark's entry of July 1 (Moulton, 4:350) reporting three bears killed clearly refers to the three bears killed on June 27.

6 The entry notes sighting "Several" bears. Here and in 8:148 and 8:149, "several" has been given the arbitrary number of three.

7 Sightings of bear tracks occur after this date (August 2 and 23) as well as sightings of "bear sign" (October 30); the latter occurred on the Columbia River so almost certainly represented black bears. Also, on August 3, "some … Bear" were seen "in the bottoms." These were probably grizzlies but aren't counted here. On September 1, "one man shot two bear" that were not retrieved; these could have been either grizzlies or black bears and also are not counted.

8 Lewis: "two large bear together … one black and the other white." The "black" bear is almost certainly a dark grizzly.

9 McNeal strikes bear with rifle and is treed for three hours. Sergeant John Ordway describes this incident four days after the fact in his entry of July 19 (Moulton, 9:338).

10 The entry is for "several bear."

11 The entry reports seeing "several" bears.

12 Lewis states, "the Fieldses … killed 2 bear and seen 6 others, we saw and fired on two … but killed neither." The two bears killed probably refer to the two shot on August 5.

13 By state: Montana, 28; Idaho, 3; North Dakota, 1.

"these bears being so hard to die reather intimedates us"

A sampling of grizzly encounters from the journals of Meriwether Lewis

May 11, 1805
About 5 P.M. my attention was struck by one of the Party runing at a distance towards us and making signs and hollowing as if in distress[.] I ordered the perogues to put too, and waited untill he arrived; I now found that it was Bratton the man with the soar hand whom I had permitted to walk on shore, he arrived so much out of breath that it was several minutes before he could tell what had happened; at length he informed me that … he had shot a brown bear which immediately turned on him and pursued him a considerable distance but he had wounded it so badly that it could not overtake him; I immediately turned out with seven of the party in quest of this monster, we at length found his trale and persued him about a mile by the blood through very thick brush of rosbushes and the large leafed willow; we finally found him concealed in some very thick brush and shot him through the skull with two balls; we proceeded [to] dress him as soon as possible, we found him in good order; it was a monstrous beast, … ; we now found that Bratton had shot him through the center of the lungs, notwithstanding which he had pursued him near half a mile and had returned more than double that distance and with his tallons had prepared himself a bed in the earth of about 2 feet deep and five long and was perfectly alive when we found him which could not have been less than 2 hours after he received the wound; these bear being so hard to die reather intimedates us all; I must confess that I do not like the gentlemen and had reather fight two Indians than one bear.

May 14, 1805
In the evening the men in two of the rear canoes discovered a large brown bear lying in the open grounds about 300 paces from the river, and six of them went out to attack him, all good hunters; they took the advantage of a small eminence which concealed them and got within 40 paces of him unperceived[;] two of them reserved their fires as had been previously conscerted, the four others fired nearly at the same time and put each his bullet through him, two of the balls passed through the bulk of both lobes of the lungs, in an instant this monster ran at them with open mouth, the two who had reserved their fires discharged their pieces at him as he came towards them, boath of them struck him, one only slightly and the other fortunately broke his shoulder, this however only retarded his motion for a moment only, the men unable to reload their guns took to flight, the bear pursued and had very nearly overtaken them before they reached the river; two of the party betook themselves to a canoe and the others seperated an concealed themselves among the willows, reload their pieces, each discharged his piece at him as they had an opportunity they struck him several times again but the guns served only to direct the bear to them, in this manner he pursued two of them seperately so close that they were obliged to throw aside their guns and pouches and throw themselves into the river altho' the bank was nearly twenty feet perpendicular; so enraged was this anamal that he plunged into the river only a few feet behind the second man … [.] when one of those who still remained on shore shot him through the head and finally killed him; they then took him on shore and butchered him when they found eight balls had passed through him in different directions; the bear being old the flesh was indifferent, they therefore took only the skin and fleece [fat], the latter made us several gallons of oil.

June 2, 1805
Accordingly I walked on shore most of the day with some of the hunters for that purpose and killed 6 Elk 2 buffale 2 Mule deer and a bear. … the bear was very near catching Drewyer; it also pursued Charbono who fired his gun in the air as he ran but fortunately eluded the vigilence of the bear by secreting himself very securely in the bushes untill Drewyer finally killed it by a shot in the head.

June 25, 1805
about noon Fields returned and informed me that he had seen two white bear near the river a few miles above and in attempting to get a shoot them had stumbled uppon a third which immediately made at him being only a few steps distant; that in runing in order to escape from the bear he had leaped down a steep bank of the river on a stony bar where he fell cut his hand bruised his knees and bent his gun. that fortunately for him the bank hid him from the bear when he fell and

that by that means he had escaped. this man has been truly unfortunate with these bear, this is the second time that he has narrowly escaped from them.

McNeal treed by a grizzly, from the 1807 edition of Gass's journal.

July 15, 1806
a little before dark McNeal returned with his musquet broken off at the breech and informed me that on his arrival at willow run he had approached a white bear within ten feet without discover him the bear being in the thick brush, the horse took the allarm and turning short threw him immediately under the bear; this animal raised himself on his hinder feet for battle, and gave him time to recover from his fall which he did in an instant and with his clubbed musquet he struck the bear over the head and cut him with the guard of the gun and broke off the breech, the bear stunned with the stroke fell to the ground and began to scratch his head with his feet; this gave McNeal time to climb a willow tree which was near at hand and thus fortunately made his escape. the bear waited at the foot of the tree untill late in the evening before he left him, when McNeal ventured down and caught his horse which by this time had strayed off to the distance of 2 ms. and returned to camp. These bear are a most tremenduous animal; it seems that the hand of providence has been most wonderfully in our favor with rispect to them, or some of us would long since have fallen a sacrifice to their farosity.

Source: Gary E. Moulton, ed., *The Journals of the Lewis & Clark Expedition*, 13 volumes (Lincoln: University of Nebraska Press, 1983-2001).

rout." On the same day, Clark reported seeing "Several fresh track of those animals which is 3 times as large as a man's track."[11]

In the lodges of the Mandans that winter, the captains heard many a cautionary tale about grizzlies. Lewis, for one, tended to dismiss these accounts. Writing on April 13, 1805, a week after departing the villages for the Pacific, he noted on the river banks

> many tracks of the white bear of enormous size[.] … the men as well as ourselves are anxious to meet with some of these bear. the Indians give a very formidable account of the strength and ferocity of this anamal, which they never dare to attack but in parties of six eight or ten persons; and are even then frequently defeated with the loss of one or more of their party. … When the Indians are about to go in quest of the white bear, previous to their departure, they paint themselves and perform all those supersticious rights commonly observed when they are about to make war uppon a neighbouring nation.

Lewis attributed the Indians' fear to a lack of firepower. The "savages," he wrote, "attack this anamal with their bows and arrows and the indifferent guns with which the traders furnish them." This assessment seemed confirmed on April 29, in the vicinity of Big Muddy Creek in eastern Montana, when Lewis killed his first grizzly, a young male he dropped with two well-aimed balls. He concluded that for a skilled rifleman armed with a good weapon "they are by no means as formidable or dangerous as they have been represented."

His attitude began to change a week later. On May 5, Clark and George Drouillard, the corps's civilian hunter, fired upon a big boar grizzly and chased it into the river. The two men shot and reloaded several times. Ten balls found their mark, and five lodged in the bear's lungs, but it managed to swim to a sandbar before dying. Noted Clark, it "was a verry large and a turrible looking animal, which we found verry hard to kill." Lewis estimated its weight at 600 pounds and was astonished to find that its heart was as big as an ox's.

The difficulty Clark and Drouillard had killing their grizzly speaks to the limitations of the Corps of Discovery's firearms. Members of the expedition carried both the Kentucky rifle and either the Model 1803 Harpers Ferry rifle or a prototype of it. The Kentucky rifle's .40- or .44-caliber balls were adequate for deer and even elk but lacked the shock power to stop a grizzly. The larger .54-caliber balls of the Model 1803 were better, but with their relatively slow muzzle velocity compared to a modern high-powered rifle they were still not up to

the task.[12] Again and again the journals tell of the grizzly's ability to absorb lead. Observed a chastened Lewis on May 11, after a mortally wounded grizzly chased Private Bratton for half a mile, "these bear being so hard to die reather intimedates us all; I must confess that I do not like the gentlemen and had reather fight two Indians than one bear."

Lewis's physiological descriptions of the bears killed on April 29 and May 5 included the curious and inexplicably erroneous statement that the male grizzly's testicles were in separate pouches several inches apart ("his testicles were pendant from the belly and placed four inches assunder in separate bags or pouches").[13] Lewis was such a keen and careful observer that it is difficult to understand how he made this mistake. Although against the odds, it is not inconceivable that both bears had deformed scrotums.

At the time of Lewis and Clark's epic journey of discovery as many as 50,000 grizzlies may have wandered what is now the western United States.[14] Now a thousand or fewer are believed to exist in isolated pockets of Wyoming, Montana, Idaho, and Washington.[15] Much of our knowledge of the grizzly and its world at the time of first contact between Europeans and Native Americans comes from the meticulous notes of Meriwether Lewis and his fellow explorers. They passed through a land of "visionary enchantment" prowled by the great variegated bear that would one day become a symbol of so much that was lost.

Kenneth Walcheck, a Foundation member and a resident of Bozeman, Montana, is a retired wildlife biologist.

NOTES

1 Gary E. Moulton, ed., *The Journals of the Lewis & Clark Expedition*, 13 volumes (Lincoln: University of Nebraska Press, 1983-2001), Vol. 4, pp. 292-293. All quotations or references to journal entries in the ensuing text are from Moulton, by date, unless otherwise indicated.

2 Moulton, Vol. 8, p. 150. The entry is for August 7, 1806.

3 Ibid., Vol. 4, pp. 303-304 (June 17, 1805).

4 Grizzly observations were made on July 24, 25, and 26, and August 1.

5 Thomas McNamee, *The Grizzly Bear* (New York: Alfred A. Knopf, 1984), pp. 24, 28; Paul Schullery, *Lewis & Clark among the Grizzlies* (Guilford, Conn.: Falcon Press, 2002), p. 141.

6 McNamee, p. 74.

7 Ibid., p. 35.

8 Raymond Darwin Burroughs, ed., *The Natural History of the Lewis and Clark Expedition* (East Lansing: Michigan State University Press, 1961), pp. 57, 59.

9 Schullery, pp. 50, 57. The subspecies designations for the Alaskan (or Kodiak) brown bear and the Eurasian brown bear are *Ursus arctos middendorffi* and *Ursus arctos arctos*, respectively.

10 After Ord scientifically described the grizzly, many years went by before that name became fixed in the language. Theodore Roosevelt opposed it, arguing that a more appropriate name would be "grisly," meaning horrifying or ghastly. See Paul Russell Cutright, *Lewis and Clark: Pioneering Naturalists* (Urbana: University of Illinois Press, 1969), p. 142. Despite Lewis's correct conclusion about one species of grizzly, he was confused by the reddish or "cinnamon" phase of the black bear, *Ursus Americanus*. Referring to the Nez Perces, he wrote on May 31, 1806, "I am disposed to adopt the Indian distinction with respect to these bear and consider them two different species." Some 19th-century naturalists agreed, and over the years taxonomists have both "lumped" and "split" cinnamon and black bears. They are now regarded a single species.

11 Moulton, Vol. 3, p. 188. The journals' first reference to grizzlies is found in Clark's entry for September 1, 1804. He mentions a "White Bear Clift" overlooking the Missouri in South Dakota, about 25 miles below the mouth of the Niobrara River, so named by Indians for having killed "one of these animals … in a whole in it." Moulton, Vol. 3, p. 38.

12 Firearms historians debate whether the Corps of Discovery carried a protype of the .54-caliber Model 1803 or a cut-down version of an earlier army rifle, the .49-caliber Model 1796.

13 Ibid., Vol. 4, p. 113.

14 This is the author's estimate. Readers should keep in mind, however, that calculating wildlife numbers is a tricky business even when dealing with existing populations, so any estimates of presettlement populations should be taken with a grain of salt. Estimates of presettlement grizzly populations in what is now the contiguous United States range as high as 100,000; see Gary Turbak, *Grizzly Bears* (Stillwater, N.M.: Voyager Press, 1997), p. 15. This estimate is almost certainly too high. Calculations of total population in the contiguous U.S. depend on estimates of the grizzly's presettlement range, which vary from 320,000 square miles to 1.5 million square miles. See Daniel P. Botkin, *Our Natural History* (New York: Grosset/Putnam, 1995), pp. 72 and 77-78. Botkin uses grizzly observations by Lewis and Clark along the upper Missouri (which he appears to undercount) to estimate a grizzly density of roughly 4 per 100,000 square miles, a figure that yields a total population—depending on a conservative or liberal estimate of grizzly range—of 12,000, 20,000, or 56,000. One problem, as noted, is undercounting the number of encounters, which will happen if one relies solely on the index of the Moulton edition of the journals, for not all sightings are referenced. Another problem with working from grizzly sightings recorded by Lewis and Clark is that they are random. A systematic survey of the sort made my wildlife biologists conducting population studies might well have yielded a higher density of grizzlies along the upper Missouri, which in turn would produce a higher overall population estimate.

15 Earthwatch Institute Web site (www.earthwatch.org/pubaffairs/news/grizzlies.html).

Meriwether Lewis's Air Gun

His pneumatic wonder astonished the Indians — but was it a single-shot or, as new evidence suggests, a repeater?

by Michael F. Carrick

During the 34th annual meeting of the Lewis and Clark Trail Heritage Foundation, in Louisville, Kentucky, last July, Ludd Trozpek, a rare-books dealer and longtime Foundation member, asked me to explain to him the method of loading Meriwether Lewis's air rifle. As a collector of antique firearms and a professional consultant on the subject, I was happy to oblige.

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Whatever type it may have been, Philadelphia gunsmith Isaiah Lukens probably made the air gun that Meriwether Lewis took to the Pacific.

As Ludd knew, the air rifle believed by many firearms historians to have been carried by Lewis on his expedition to the Pacific was made by Isaiah Lukens of Philadelphia. At some point after the expedition, Lukens reacquired it. This rifle, which is on display in the museum of the Virginia Military Institute, superficially resembles, and would have been loaded in a manner similar to, the flintlock rifles of the period, except that compressed air rather than gunpowder was the propellant. The Lukens air rifle has a hollow buttstock for an air reservoir. A hand pump, similar to one for inflating a bicycle tire, was used to pump air into the reservoir. Some 700 to 1,000 strokes might be necessary to bring it up to the pressure required to kill a deer at 100 yards. Once the butt-reservoir was filled, a ball was inserted at the muzzle end of the barrel and pushed home with a ramrod. The gun could then be cocked and fired. Pulling the trigger released a short burst of air that expelled the ball. The shooter reloaded the gun in the same manner described. He could fire the gun 20 or more times without recharging the reservoir, but successive firings reduced the air pressure, so that each shot was weaker than the last.

Ludd listened to my explanation, then said that he had recently come across some information indicating that it wasn't done that way at all. I was skeptical until he showed me a page he had photocopied from the published journal of one Thomas Rodney, a political ally of Thomas Jefferson. While traveling down the Ohio in the late summer of 1803, Rodney had a chance encounter with Lewis in Wheeling. Lewis was aboard the Corps of Discovery's keelboat, recently constructed near Pittsburgh. He too was heading downriver, on the first leg of his water journey across the continent. Rodney wrote:

> Visited Captain Lewess barge. He shewed us his air gun which fired 22 times at one charge. He shewed

> us the mode of charging her and then loaded with 12 balls which he intended to fire one at a time; but she by some means lost the whole charge of air at the first fire. He charged her again and then she fired twice. He then found the cause and in some measure prevented the airs escaping, and then she fired seven times; but when in perfect order she fires 22 times in a minute. All the balls are put at once into a short side barrel and are then dropped into the chamber of the gun one at a time by moving a spring; and when the trigger is pulled just so much air escapes out of the air bag which forms the britch of the gun as serves for one ball. It is a curious piece of worksmanship not easily described and therefore I omit attempting it.[1]

Reading this passage left me stunned and momentarily speechless. For 25 years, most firearms historians have believed that Lewis carried a single-shot air rifle made by Lukens and now on display at V.M.I. As it happened, at that very moment I had in my hand a large laminated poster, purchased a few minutes earlier at the display booth of the Army Corps of Engineers, of "The Lewis & Clark Expedition Air Rifle." The photograph on the poster was that of the single-shot Lukens on view at V.M.I. But that single-shot rifle and the repeating air gun described by Rodney are different in crucial respects.

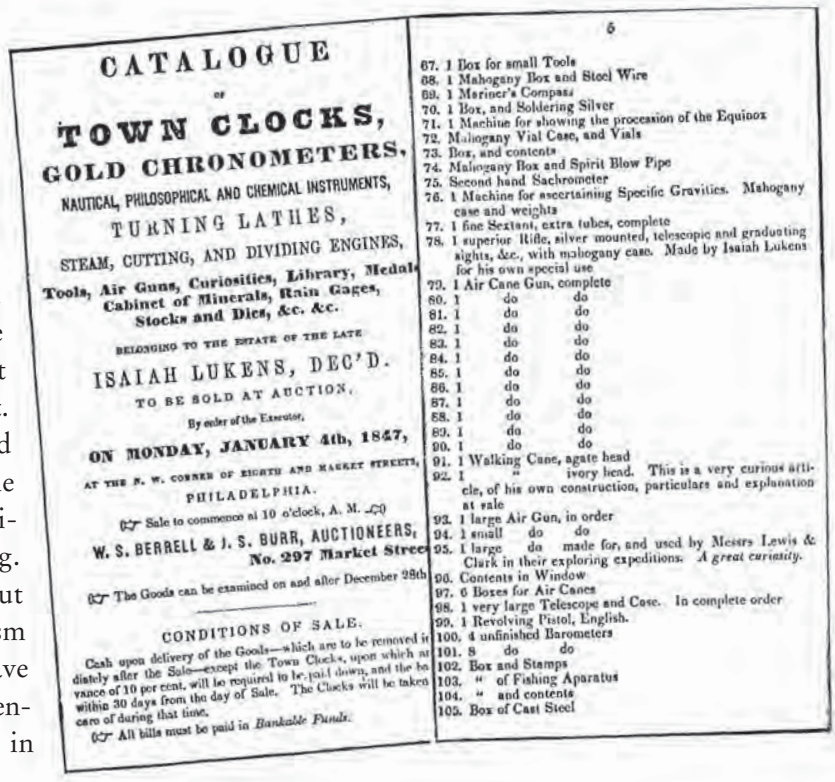
I was familiar with the type of air gun described by Rodney. He wrote about a gun with a dozen or more balls pre-loaded into a tube-shaped magazine fixed alongside the barrel. Once the butt-reservoir was filled with air, it was only necessary for the shooter to push a small metal bar—the breechblock—about an inch to the right. This action removed another ball from the magazine and positioned it for firing. With this simple but ingenious mechanism Lewis truly could have fired all 22 balls mentioned by Rodney in less than a minute.

In modern parlance, this gun was a "repeater." A repeating mechanism of that description had been well known in Europe since its introduction by the Vienna-based gunsmith Bartolomeo Girandoni in 1780.[2]

My questions to Ludd were, Who was Rodney, and is his account credible?

Rodney, I learned, fought in the Revolutionary War as a captain (later colonel) in the Delaware militia. He saw action at the Battle of Princeton, and as ranking officer in his regiment achieved the distinction of guarding Washington himself during the Continental Army's march to winter quarters at Morristown. In 1781, he served as a delegate to the Confederation Congress and was later speaker of the Delaware house of representatives and a justice of the Delaware supreme court.[3] In July 1803, President Jefferson appointed him a judge in the Mississippi Territory. The 59-year-old Rodney was en route to assume that post when he met Lewis in Wheeling.[4]

In his journal, Rodney writes of meeting Lewis on September 7 and witnessing the air-gun demonstration on September 8. Over dinner that evening, they talked about the air gun and the portable iron boat fabricated for Lewis at Harpers Ferry. For dessert they had watermelon, which they enjoyed again the next day when Rodney came aboard the keelboat for "a parting drink" with the young explorer. "I … then bid him adieu and stayed on shore to see him depart, and I waited till I saw him over the first ripple."[5]



CATALOGUE

OF

TOWN CLOCKS,

GOLD CHRONOMETERS,

NAUTICAL, PHILOSOPHICAL AND CHEMICAL INSTRUMENTS,

TURNING LATHES,

STEAM, CUTTING, AND DIVIDING ENGINES,

Tools, Air Guns, Curiosities, Library, Medal Cabinet of Minerals, Rain Gages, Stocks and Dies, &c. &c.

BELONGING TO THE ESTATE OF THE LATE

ISAIAH LUKENS, DEC'D.

TO BE SOLD AT AUCTION,

By order of the Executor,

ON MONDAY, JANUARY 4th, 1847,

AT THE S. W. CORNER OF EIGHTH AND MARKET STREETS,

PHILADELPHIA.

☞ Sale to commence at 10 o'clock, A. M. ☜

W. S. BERRELL & J. S. BURR, AUCTIONEERS,
No. 297 Market Street

☞ The Goods can be examined on and after December 29th

CONDITIONS OF SALE.

Cash upon delivery of the Goods—which are to be removed i
diately after the Sale—except the Town Clocks, upon which a
vance of 10 per cent. will be required to be paid down, and the ba
within 30 days from the day of Sale. The Clocks will be taken
care of during that time.

☞ All bills must be paid in *Bankable Funds*.

5

67. 1 Box for small Tools
68. 1 Mahogany Box and Steel Wire
69. 1 Mariner's Compass
70. 1 Box, and Soldering Silver
71. 1 Machine for showing the procession of the Equinox
72. Mahogany Vial Case, and Vials
73. Box, and contents
74. Mahogany Box and Spirit Blow Pipe
75. Second hand Sachrometer
76. 1 Machine for ascertaining Specific Gravities. Mahogany case and weights
77. 1 fine Sextant, extra tubes, complete
78. 1 superior Rifle, silver mounted, telescopic and graduating sights, &c., with mahogany case. Made by Isaiah Lukens for his own special use
79. 1 Air Cane Gun, complete
80. 1 do do
81. 1 do do
82. 1 do do
83. 1 do do
84. 1 do do
85. 1 do do
86. 1 do do
87. 1 do do
88. 1 do do
89. 1 do do
90. 1 do do
91. 1 Walking Cane, agate head
92. 1 " ivory head. This is a very curious article, of his own construction, particulars and explanation at sale
93. 1 large Air Gun, in order
94. 1 small do do
95. 1 large do made for, and used by Messrs Lewis & Clark in their exploring expeditions. *A great curiosity.*
96. Contents in Window
97. 6 Boxes for Air Canes
98. 1 very large Telescope and Case. In complete order
99. 1 Revolving Pistol, English.
100. 4 unfinished Barometers
101. 8 do do
102. Box and Stamps
103. " of Fishing Aparatus
104. " and contents
105. Box of Cast Steel

FROM THE *MONTHLY BUGLE* (PA. ANTIQUE GUN COLLECTORS ASSN.), FEB. 1977

The title page of Isaiah Lukens's estate catalogue and page 5, listing Meriwether Lewis's air gun (item 95), "A great curiosity."

The Lukens single-shot air rifle

Few details are known of the air gun carried by Lewis, since he wrote nothing in the journals about its mechanism or operation, and Rodney's words are the first we have of its specifics.

Any air gun needs a reservoir to hold the compressed air that propels the ball. As mentioned, the shooter fills the reservoir with a device similar to a bicycle pump. The number of strokes can vary from 500 to 2,000,

TOP PHOTO FROM *WEAPONS: AN INTERNATIONAL ENCYCLOPEDIA FROM 5000 B.C. TO 2000 A.D.* BOTTOM AND MIDDLE PHOTOS COURTESY THE AUTHOR

Girandoni-type repeating air gun

The Lukens single-shot air rifle on display at V.M.I.

Ball-reservoir-type air gun

depending on the type of reservoir and the amount of pressure desired. Air guns of the period could be pumped up to 500 p.s.i. (pounds per square inch).[6] By comparison, the air pressure in most auto tires is 30 to 40 p.s.i.

The air guns of Lewis's day had three types of reservoirs. In many guns, including the Lukens model at V.M.I. and almost certainly the gun described by Rodney, the reservoir was a metal chamber that formed the buttstock. In other models it was an external hollow sphere, about the size of a grapefruit, that either hung from the bottom of the barrel or perched on the top. The reservoir could also take the form of a hollow outer shell that enveloped the barrel.

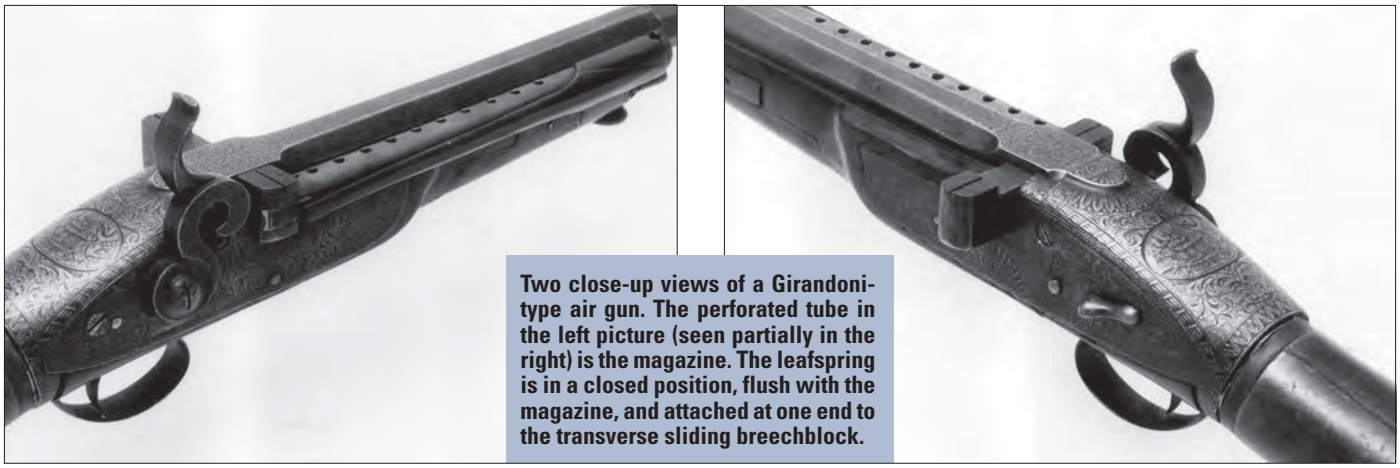
In 1956, pioneer air-gun collector G. Charter Harrison, Jr., suggested that Lewis had probably carried a single-shot Lukens air rifle with a butt reservoir.[7] A year later, Harrison changed his mind and proposed that the Lewis air gun probably had a hanging spherical chamber fastened in front of the trigger guard.[8] So matters stood until 1976, when air-gun collector Henry M. Stewart presented a paper at a meeting of the American Society of Arms Collectors arguing that Harrison was right the first time—the weapon carried by Lewis was probably a Lukens-style air rifle, with the reservoir in the buttstock. A key piece of evidence was an 1847 catalogue he had found in the archives of the Franklin Institute, of Philadelphia. This document listed the items offered in the sale of the estate of Isaiah Lukens, a prolific instrument maker, clocksmith, and all-around craftsman whose output included chronometers, nautical devices, and air canes (similar to air guns, these were walking canes with a firing mechanism concealed in the shaft). It was the catalogue's item number 95 that got Stewart's attention: "A large [air gun] made for, and used by Messrs Lewis & Clark in their exploring expeditions. *A great curiosity.*"

Stewart owned a number of air guns made by Lukens, and he was certain that one of them was probably the weapon carried on the expedition.[9] He based this belief on certain repairs that appeared to have been made to the gun's main spring which were similar to those made by John Shields, the expedition's gunsmith, as recorded by Lewis on June 9, 1805.[10] After his death, in 1988, Stewart's large collection of firearms, including the air rifle thought to have been Lewis's, went to Stewart's alma mater, V.M.I.[11]

Girandoni-style repeating air gun

In the late 18th century, Bartolomeo Girandoni designed and manufactured butt-reservoir, breech-loading, tube-fed repeating air rifles in his Vienna shop for the Austrian army. He received a contract for 500 air guns in 1780 and an additional 700 in 1785. Eventually some 1,500 Girandoni air rifles saw service in the Austrian army.[12]

An instruction manual printed in 1788 for Austrian troops fighting in the Russo-Turkish War gives the rifle's



Two close-up views of a Girandoni-type air gun. The perforated tube in the left picture (seen partially in the right) is the magazine. The leafspring is in a closed position, flush with the magazine, and attached at one end to the transverse sliding breechblock.

FROM THE COLLECTION OF LARRY HANNUSCH

specifications (converted to our system of measurement): caliber (bore diameter), .51 inches; weight, loaded, 9 pounds, 5 ounces.; overall length, 48 ½ inches; length of octagonal barrel, 33 inches. The forestock was walnut, and the butt-reservoir consisted of two forged sheet-iron halves joined by 11 rivets and brazed all around for a hermetic seal, then covered with leather.[13]

The rifle's magazine, a tube fixed to the barrel, held 20 to 30 balls, depending on the particular model. A sliding breechblock intersected the magazine at a right angle. The breechblock had a hollowed-out chamber that held a single ball. Once a ball was chambered, a leafspring attached to the right side of the breechblock pushed it to the left, into the barrel, and held it in place for firing. Cocking the hammer and pulling the trigger opened and closed a valve, releasing a burst of air from the reservoir with sufficient force to propel the ball. To fire a second round, the shooter pushed the breechblock to the right with his thumb while tilting the rifle up, causing another ball to roll into the chamber. With the release of thumb pressure, the leafspring pushed the breechblock and chambered ball back into firing position.

Using a hand pump, a shooter filled the reservoir with air, loaded the magazine, and fired one ball at a time until the air in the reservoir was exhausted. The Girandoni air guns used by the Austrian army had sufficient pressure to fire 30 consecutive balls at least 125 yards at a lethal velocity.

What we know about the operating parts and procedures of Girandoni air guns closely matches Thomas Rodney's account of Lewis's gun: "All the balls are put in at once into a short side barrel and are then dropped into the chamber of the gun one at a time by moving a spring; and when the trigger is pulled just so much air escapes out of the air bag … as serves for one ball."[14]

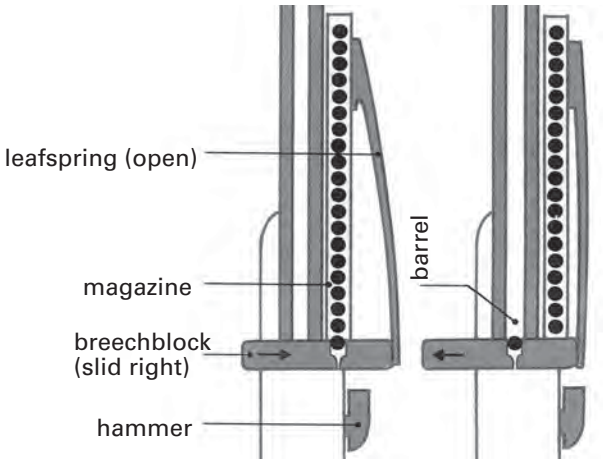
The case for a Girandoni-type air gun

Rodney's account is credible. His description of his two days with Lewis meshes with Lewis's account of his meeting with Rodney, who recorded the events immediately after they occurred. Moreover, Rodney knew guns: he was a veteran of the Revolutionary War, a militia colonel, and a hunter. His Ohio River journal includes several references to hunting, and as recently as the day before his meeting with Lewis he purchased shot and powder. So it is readily apparent that Rodney was familiar with the single-shot guns of the day.[15] And the air gun he describes Lewis demonstrating is remarkably similar to Girandoni's. It is most definitely not a single-shot, muzzle-loading air gun of the Lukens type.

Many private gunmakers in Europe made copies and variations of the so-called Girandoni system, and by Lewis's day knowledge of the mechanism had almost certainly arrived in the United States. Air-gun historian Robert Beeman points out that the typical receiver (the metal housing containing the gun's moving parts) on air guns made by Lukens and his protégé Jacob Kunz is similar in its materials (brass or bronze), shape, and style to those of the Girandoni-type Austrian butt-reservoir air rifles in his collection. "Such a styling," writes Beeman, "had already made its way to England … by at least 1805, so it is reasonable that this style could have found its way to America by the end of the 1700s."[16] Beeman specifically refers to the receivers of the guns in question, but it follows that any part or all of the Girandoni system could be copied.[17]

Another clue to the possibility that Lewis carried a Girandoni-type air gun is the reaction of Indians who saw him shoot it. Time and again, Lewis and Clark report how a demonstration of the air gun invariably "astonished" the natives. I have often wondered why the Indians would

FROM ARMS AND ARMOR ANNUAL, 1973 (DIGEST BOOKS), P. 253



Sectional top view of working parts of a Girandoni-type air gun. The hammer pulls back to cock the valve air-release mechanism. With his thumb, the shooter (pictured left) pushes the breechblock across to pick up a ball from the magazine. He then releases the breechblock, which the leafspring pushes back into position so the ball is aligned with the barrel. Pulling the trigger releases a blast of air from the butt-reservoir. (Adapted from *Weapons: An International Encyclopedia from 5000 B.C. to 2000 A.D.*, St. Martin's Press.)

be so astonished. It's true that firing the single-shot Lukens air rifle required no gunpowder and produced no smoke, and the sound would not have been as loud as the familiar musket's. Otherwise, the Lukens was loaded, rammed, and cocked in a manner familiar to the Indians. But a rapid-fire, repeating, smokeless gun would indeed have astonished them—and almost anyone else at the time.[18]

Assuming that Lewis had a tube-fed, breech-loading, repeating air gun makes one more alert to nuances in the wording of the journals. For me, the strongest evidence in the journals of a repeating gun is in Lewis's entry of January 24, 1806: "My Air-gun also astonishes them very much, they cannot comprehend it's shooting so often and without powder; and think that it is great medicine."[19] The key words are "shooting so often."

On August 30, 1804, Clark wrote, "the air gun astonished them verry much."[20] But the scene appears to have impressed Private Joseph Whitehouse even more. On the same day, Whitehouse recorded, "They all stood amazed at this curiosity; Captain Lewis discharged the Air Gun several times, and the Indians ran hastily to see the holes that the Balls had made which was discharged from it. [A]t finding the Balls had entered the Tree, they shouted a loud at the sight and the Execution that was done surprized them exceedingly."[21]

Hitting a tree a couple of times is no big deal, but Whitehouse's description makes more sense if you imagine Lewis rapidly firing six to eight shots just by pushing the chamber bar to the right as fast as he could while simultaneously cocking the hammer and pulling the trigger—all of which he could easily do with a Girandoni-style weapon. It must have been the speed of the shooting that impressed the observers. Rodney wrote that Lewis told him he could fire 22 shots in a minute. Now that would truly "astonish" the Indians! By contrast, with the single-shot Lukens he would have had to dismount the gun, place a ball in the muzzle, ram it down with the ramrod, raise and cock the gun, and fire. It's doubtful that a skilled shooter could have gotten off more than 10 shots in a minute this way, and even six shots would have been very fast.

Almost exactly one year before—on August 31, 1803—Lewis, having departed from Pittsburgh earlier in the day, demonstrated his air gun to a group of settlers about three miles down the Ohio. When a man in the crowd named Blaze Cenas tried handling the gun, it accidentally discharged. The ball struck a woman in the head and knocked her to the ground. As blood gushed from her temple Lewis feared the shot was fatal, but the ball had merely grazed her scalp, and "in a minute she revived to our enespressable satisfaction."[22]

This accidental shooting becomes more understandable when one assumes that the weapon was a repeater. Lewis notes that Cenas was "unacquainted with the management of the gun." Cenas, and for that matter any other man living on the Ohio in 1803, would have been on familiar terms with the single-shot flintlocks of the day, and the operation of a Lukens-type single-shot air gun would have seemed vaguely similar in the sense that a ball had to be rammed down the muzzle each time the gun was fired.

In the same paragraph, Lewis reports that he fired the gun seven times at 55 yards with pretty good success. That could be interpreted as seven rapid shots.

The journals provide another intriguing clue about a detail of Lewis's pneumatic wonder. All the expedition journalists refer to it as a "gun," never as a "rifle." All rifles are guns but not all guns are rifles, as any Marine will tell you, and it's an important distinction. In this article I use "air rifle" when writing of the Lukens firearm on display at V.M.I. That weapon has a rifled bore, and

is, therefore, a rifle. Because I do not know if the repeating gun that Rodney describes was rifled or smoothbore, I refer to it by the less specific term air gun. The Corps of Discovery carried both rifles and smoothbores, and we can be certain that every man on the expedition knew the difference. There are 39 references in the journals to "air gun" and not a single one to "air rifle." So whatever its particular type, Lewis's weapon was probably a smoothbore.

If Lewis did have a Girandoni-type air gun, how did he acquire it? I believe that the gun, in fact, came from the shop of Isaiah Lukens. The catalogue of the Lukens estate specifically states that the air gun was "made for" Lewis.[23] Lukens could well have had a Girandoni-system European air gun in stock, but I think it more likely that he made one on the Girandoni principle. Lukens, like Girandoni, was a clockmaker, and the scope of Lukens's work strongly suggests that he had the skills, knowledge, and tools for making such a gun, whose fabrication would not be nearly so difficult as making the scientific instruments listed in the estate sale. Lukens may have read about the mechanism and seen diagrams of the Girandoni rifle in scientific or military journals of the day, or some traveler may have shown him an example. Although Girandoni made air rifles under contract with the Austrian army, many stolen or captured weapons probably wound up in private hands. The Austrian army fought the French from 1792 to 1797. A government report of September 21, 1799, lists 308 air rifles as missing, and another report, dated January 20, 1801, states that 399 Girandoni air rifles had been lost in battle.[24]

The gun listed in Lukens's estate is different from all the other air guns listed. In addition to saying it was the gun Lewis and Clark carried on the expedition, the catalogue calls it a "*great curiosity*." (The italics are in the original.) The other air guns and air canes in the catalogue must have been curiosities in that era, too, and to single out this weapon in such a manner suggests that it was something far out of the ordinary.

In summary, Thomas Rodney's contemporaneous description of Meriwether Lewis's air gun seems to me to be beyond doubt. I believe that he accurately described the mechanism that he had seen. Rodney's journal is filled with detailed observations written by a man with a keen interest in almost everything he encountered, be it a floating mill, a fossil bed, or Lewis's keelboat.[25]

We may wonder why Lewis never mentions that his air gun was a repeater. Nor did Lewis say whether his air gun had a butt-reservoir or a sphere reservoir, or how many times it needed to be pumped, or its caliber, or whether its bore was rifled or smooth. But the journals are often brief or silent on details concerning common items and routines. So it's frustrating but not surprising that Lewis and the other expedition journalists neglected to tell us about the technical details of their firearms. The

"Capt Lewis fired his Air gun" . . . excerpts from the L&C journals

we Showed them many Curiosities and the air gun which they were much asstonished at.
—Clark, August 19, 1804 (among the Otos)

Capt. Lewis Shot his air gun told them that their was medician in her & that She would doe Great execution, they were all amazed at the curiosity, & as Soon as he had Shot a fiew times they all ran hastily to See the Ball holes in the tree they Shouted aloud at the Site of the execution She would doe &c.
—Private Joseph Whitehouse, August 30, 1804 (among the Teton Sioux)

after the Council was over we Shot the Air gun which appeared to assonish the nativs much.
Clark, October 29, 1804 (among the Hidatsas)

Capt. Lewis Shot the airgun, which they thought a great meddicine & Shewed them a nomber of Strange things.
—Sergeant John Ordway, August 17, 1805 (among the Shoshones)

Several Canoes of men omen and Children came to the camp. and at one time there was about 37 of those people in Camp Capt Lewis fired his Air gun which astonished them in Such a manner that they were orderly and kept at a proper distance dureing the time they Continued with him.
—Clark, April 3, 1806 (on the lower Columbia)

after the Council was over … we amused ourselves with Shewing them the power of Magnetism, the Spye glass, compass, watch, ***air gun*** and Sundery other articles equally novel and incomprehensible to them.
—Clark, May 11, 1806 (among the Nez Perces)

I now got back to the perogue as well as I could and prepared my self with a pistol my rifle and air-gun being determined as a retreat was impracticable to sell my life as deerly as possible.
—Lewis, August 11, 1806 (after his accidental shooting by Pierre Cruzatte; Lewis thought at first that they were under attack)

ALL FROM GARY E. MOULTON, ED., *THE JOURNALS OF THE LEWIS & CLARK EXPEDITION*, 13 VOL. (1983-2001)

most information we have about the air gun comes from a single interested observer—Thomas Rodney.

While entry number 95 of the 1847 Lukens catalogue is of immense interest and points to the probability that Lukens provided Lewis with an air gun, it is not hard evidence that the particular air gun on display at V.M.I. is, in fact, the one taken on the journey. In the face of Rodney's eyewitness description, the question of where Lewis's air gun is today, or whether it still exists, remains open.[26]

Foundation member Michael Carrick is vice-president of the Oregon Chapter. He is a staff editor of Gun Report *magazine and writes a monthly historical column on firearms.*

Notes

1 Dwight L. Smith and Ray Swick, eds., *A Journey through the West—Thomas Rodney's 1803 Journal from Delaware to the Mississippi Territory* (Athens: Ohio University Press, 1997), p. 50. Rodney met up again with Lewis at Louisville the evening of October 17, when "Captain Lewis and his companion Captain Clark … called at our boat to see us and took a glass of wine with us and bid us adieu." Ibid., p. 124.

2 Girandoni (also spelled Girardoni and Girardony) was not the first to make repeating air guns, but he was the first to make them by the hundreds. Repeating air guns were known in England by the 1730s. In addition to fulfilling his military contracts, Girandoni also made guns for the civilian market.

3 He was also the younger brother of Caesar Rodney, a hero of the Revolutionary War as well as a member of the Continental Congress and signer of the Declaration of Independence.

4 Smith and Swick, pp. 5 -8.

5 Ibid., pp. 50-53. Rodney also mentions the dimensions of the keelboat, its draft, and its cost—$400. For his part, Lewis records meeting Rodney on September 7. On the 8th, he "dined with Colo. Rodney and his suit, in the evening they walked down to my boat and partook of some watermellons." See Gary E. Moulton, ed., *The Journals of the Lewis & Clark Expedition*, 13 vols. (Lincoln: University of Nebraska Press, 1983-2001), Vol. 2, pp. 73-75.

6 Christian Konwiarz, "Test Firing a 150 Year Old Air Rifle," *The Gun Report*, August 1983, p. 19.

7 G. Charter Harrison, Jr., "The Lewis and Clark Air Gun," *The Gun Report*, May 1956, p. 6.

8 G. Charter Harrison, Jr., "Re-Inquiry Into the Lewis and Clark Air Gun," *The Gun Report*, November 1957, p. 14. Harrison had found an American-made, ball-reservoir air gun with repairs to it which he thought were consistent with those made by the expedition's gunsmith, John Shields. The ball-reservoir air gun he found is pictured on p. 17.

9 Henry Stewart, "The American Air Gun School of 1800-1830," *Bulletin No. 35* of The American Society of Arms Collectors, Valley Forge, Penn., 1976, p. 33.

10 Moulton, Vol. 4, p. 271. Lewis: "it was necessary to repare some of our arms, and particularly my Airgun the main spring of which was broken."

11 For more on Stewart's air gun and other existing contenders for the one that Lewis may have taken on the expedition, see Robert Beeman and Ulrich Eicstädt, "Whence the Wind Blows," www.beemans.net/visier-lewis&clarkairgun.htm.

12 Fred Baer, "Napoleon Was *Not* Afraid of It," from Robert Held, ed., *Arms and Armor Annual* (Northfield, Ill.: Digest Books, 1973), p. 253.

13 Ibid., p. 250.

14 Smith and Swick, p. 50.

15 Ibid., pp. 39, 50, 81, 89, 99, 109, 118, and 120. Rodney wrote of hunting, cleaning his gun, making balls, etc., in many entries.

16 Robert D. Beeman, "Proceeding on to the Lewis & Clark airgun," *Airgun Review # 6*, Ellicott City, Md., 2000, p. 13

17 Eldon G. Wolff, *Air Guns* (Milwaukee Public Museum, 1958), pp. 97-98. Using an alternate spelling of Girandoni's name, Wolff states, "The Girardoni breech is found not only on air guns bearing that name, but also on a number of others, the following have been examined: Fruwirth, Oesterleins, Staudenmayer, Contriner, and Lowentz." It may be significant that Rodney refers to the butt reservoir of Lewis's gun as "the air bag which forms the britch." I believe that "britch" refers to the gun's breech (the lower end of the barrel in which the ball is positioned for firing) and that "bag" refers to the butt reservoir. Note in the illustration of the Girandoni gun that the butt-reservoir is cone-shaped with a convex end. The word "bag" may describe this shape. Later in the 19th century, there were powder flasks cased with London Colt revolvers that had a similar shape, and they are called "bag flasks." Bulbous grips on small flintlock pistols of the period are referred to as "bag-shape grips." It isn't clear whether Rodney is describing the shape of the air reservoir or is using "bag" as a synonym for the "container" of air.

18 Several previous studies of Lewis's air gun state that the gun is mentioned 16 to 19 times in the journals. (See, for example, Roy M. Chatters, "The Not-So-Enigmatic Lewis and Clark Airgun," *We Proceeded On*, May 1977, editor's note p. 6; and Ashley Halsey, Jr., "The Air Gun of the Lewis & Clark Expedition," *American Rifleman*, August 1984, p. 37.) Earlier researchers, however, did not have the benefit of the most recent (Moulton) edition of Lewis and Clark journals, whose 13 volumes include virtually all known copies, rough copies, field notes, and even scraps of paper associated with the original writings. Moulton lists 39 references to the air gun. Some are obviously one writer copying from the other, or one writer later refining his notes. But little bits of evidence can sometimes be gleaned from these slight variations.

19 Moulton, Vol. 6, p. 233.

20 Ibid., Vol. 3, p. 24.

21 Ibid., Vol. 11, p. 66.

22 Ibid., Vol. 2, p. 65.

23 This claim apparently was written 44 years after the fact—something to bear in mind. How or why Lukens reacquired the weapon is unknown—perhaps Lewis returned it for maintenance and never reclaimed it.

24 Baer, p. 256. It is not clear whether 308 plus 399 guns were lost, or whether the 308 are included in the figure 399.

25 Smith and Swick, pp. 76, 80, and 50.

26 The author thanks Ludd Trozpek and Jay Rasmussen for their invaluable assistance with this article.

The L&C journals are silent on whether the explorers hewed to military regulations about grooming, leaving artists to make their own judgments. In this detail from John Clymer's *Up the Jefferson*, Clark wears his red hair long and tied in a queue. Both he and York (rear) are clean shaven, while Charbonneau (in front of Sacagawea) and the other man are bearded.

COURTESY DORIS CLYMER AND THE CLYMER MUSEUM OF ART, ELLENSBURG, WASH.

Neatness Mattered

Hair, beards, and the Corps of Discovery

by Robert J. Moore, Jr.

When the Corps of Discovery worked its way across the continent two centuries ago, were its members bearded or clean shaven, and did they wear their hair long or short? Paintings of the expedition portray the explorers in various degrees of hirsuteness. Such details, however, are left largely to the artist's imagination, for like so many matters of daily routine, the journals are silent on the explorers' grooming habits.

Despite the lack of documentary evidence, I believe that almost all of the time—even in the deepest part of the American wilderness—Lewis and Clark and the men they led shaved on a regular basis and kept their hair closely cropped, in accordance with U.S. Army regulations and civilian styles of the period.

Most of the men recruited for the Corps of Discovery were volunteers from other army units, and nearly all of the other men who joined from Kentucky, Indiana, Illinois, and Missouri enlisted for the duration of the expedition. All members, even civilian interpreters, were subject to military law and discipline. In addition, they were men of their era, influenced by civilian fashions, which by 1804 favored short hair and clean-shaven faces, perhaps adorned with the close-cropped sideburns that were then coming into vogue.

MISSOURI HISTORICAL SOCIETY

This Saint-Mémin portrait of Lewis with a queue was almost certainly made before the expedition, when he was serving as Jefferson's secretary.

In or out of the army, beards were not fashionable during this period. Think of paintings of the Founding Fathers, or any other portrait or statue of a man of the 1750-1800 period, and you will be hard-pressed to find a single depiction of an individual sporting a beard, a moustache, or any facial hair whatsoever. Shortly after 1800, long sideburns (a term not invented until the mid-19th century) began to become fashionable. Their length increased gradually, until by the War of 1812 many extended to the chin and almost formed a full beard. Hair was worn full but not long in the back as it had been in the 1700s. The ideal hairstyle, which was emulated by the fashionable young men of the day, was that sported by the ancient Romans on countless pieces of statuary, with short cascading bangs in the front. Napoleon Bonaparte—probably the most famous person of the era—sported this haircut, called "à la Titus," after the Roman Emperor Titus Flavius Sabinus Vespasianus, who ruled from 79 to 81 A.D.

However much influenced by popular fashion, the grooming of expedition members was dictated more by military regulation. Clues abound in the journals as to the military nature of the expedition and the way in which normal military procedures continued, even in the middle of the wilderness. The journals mention soldiers standing formal guard duty in the many camps along the route and in the three forts constructed for winter quarters. Frequent, formal inspections were conducted of the men and their clothing, arms, and accoutrements. Courts martial were convened to discipline men who violated the Ar-

ticles of War, and harsh punishments were meted out to the guilty. Lewis and Clark used their espontoons—spear-like signs of military rank—in the middle of what is now Montana, and Lewis wore his officer's cocked hat at the crest of the Rocky Mountains. At imposing ceremonies held at various points on their trek across the continent, officers and soldiers dressed in formal uniforms to awe and impress native peoples.

Uniformity of appearance was extremely important to 18th- and early 19th-century warfare, and this extended to hair length and whether or not men could wear beards. The well-trained soldier was part of a unit that looked smart, marched properly, and fired volleys so much in unison that the shots sounded as though they came from a single weapon. Uniformity had the potential to scare the enemy; in effect it was a form of psychological warfare. The armies of the 18th and early 19th century conformed to rigid ideals of individual appearance. Some units had height requirements. Many German and Prussian units standardized their appearance by requiring men to braid their hair into long queues, or pigtails, that fell to the waist, powder their hair white, and grow thick moustaches, which they waxed to keep the points up. (In lieu of braiding, some wore hair pieces, and men deficient in facial hair solved the problem with false moustaches and glue.)[1]

FILSON HISTORICAL SOCIETY (BY JOHN WESLEY JARVIS)

James Wilkinson, the U.S. Army's top general, insisted that both soldiers and officers wear their hair short. Many officers resisted the order.

In the United States Army, from the time of its inception, most men had long hair tied back in a queue that fell to the shoulders, and no facial hair was allowed. This followed the British pattern of the era. During the Revolutionary War, soldiers in the Continental Army were required to shave three times a week. Regimental barbers shaved the men in the evening hours and were paid a small amount by each man for the service. This custom continued into the era of Lewis and Clark.[2]

Wilkinson's order

Traditions were well established in the U.S. Army and strongly entrenched by the time of the Lewis and Clark Expedition. For this reason, many officers were upset by an order in 1801 from James Wilkinson, the army's commanding general, that required them to cut their hair short. The order, probably influenced by the latest republican fashions of Napoleonic France, was issued on April 30, 1801, and read in part: "For the accommodation, comfort and health of the troops the hair is to be croped without exception, and the General will give the Example."[3] Many officers and men were at first resistant to the order, which was repeated several times over the next few months. Wilkinson also forbade the long sideburns of the era. An order of July 29, 1801, stated: "Whiskers and Short Hair illy accord. They will not therefore be permitted to extend lower than the bottom of the ear. The less hair about a Soldier's head, the neater and cleaner will he be."[4] Wilkinson would brook no resistance to his fiat and repeated it in general orders issued October 11, 1801:

> The Order for Cropping the Hair was intended to introduce uniformity as well as neatness and cleanliness. The General observes that the first principle has been missunderstood, or Disregarded. He therefore deems it necessary to direct the Hair to be Close Cropped—and with as much uniformity as possible, and he orders the Inspecting Officers to report all such persons as do not conform to this essential regulation.[5]

The order may actually have been prompted by President Jefferson, but it was Wilkinson who zealously enforced it. Many officers resisted the order. Some associated cropped hair with criminals, while others simply clung to the older style and traditions within the service. Some officers did not cut their hair until Wilkinson made a personal inspection of their cantonments. Captain Russell Bissell, the commanding officer of one of the companies from which men were drawn for the Lewis and Clark Expedition, wrote to his brother Daniel on July 9, 1802, that he was ready to resign from the army over the issue, but since no one at his post was empowered to accept his resignation, "I was obliged to submit to the act that I despised, and if ever you see me you will find that I have been closely cropped."[6]

One old veteran of the Revolution, Colonel Richard Butler of the 2nd U.S. Infantry, appealed personally to Wilkinson to be exempted from the order. Wilkinson made a special exception in the case of Butler in his general order of July 29, 1801, allowing this one officer to con-

tinue to wear his hair long.[7] But trouble loomed, for Wilkinson loved uniformity and insisted that everyone, from a private to the highest-ranking officer, be subject to criticism for improper dress or deportment. He wrote in general orders on December 19, 1801, that "where such loose doctrines [are] suffered to prevail, discipline would languish and indolence, ignorance obstinacy and anarchy would soon triumph."[8]

Butler's defiance

Wilkinson believed that the first duty of an officer was to lead by example.[9] Perhaps for this reason, in June 1803 he revoked his exception to Colonel Butler's queue. He also placed the old officer under arrest and ordered him to Fredericktown, Maryland, for court martial. Andrew Jackson, then an officer in the Tennessee militia, wrote to President Jefferson protesting Wilkinson's hounding of Butler. Many officers believed this contretemps was merely an excuse to force the old man out of the service. Butler received a reprimand, but in 1805 he was court martialed once more, this time in New Orleans. The court found Butler guilty of acting mutinously by refusing the order of the commanding general to crop his hair and appearing publicly in command of his troops with his hair queued. He was suspended from command for a year without pay. But the sentence was never carried out, for on September 7, 1805, just days after the conclusion of the court martial, Butler caught yellow fever and died. Before expiring, he asked friends to bore a hole in the bottom of his coffin so that his queue might hang down in final defiance of Wilkinson's order.[10]

For the young and ambitious in the army, resistance of this type would never do, and by the time Lewis and Clark assembled their men at Wood River, Illinois, in the fall of 1803, soldiers and officers (other than Richard Butler) had short hair. In 1801 and 1802, Colonel John Hamtramck, commanding officer of the 1st U.S. Infantry, ordered that "The hair of both Non Commissioned Officers & men … be cut short, once every month." Portraits of the era's officers by Charles B.J. Févret de Saint-Mémin, Charles Willson Peale, and other artists visually reinforce the fact that hair was worn short by the time of the expedition.[10]

Colonel Hamtramck and others also repeated the necessity of strict uniformity. Camp and garrison life was regulated by Baron Freidrich Wilhelm von Steuben's *Regulations for the Order and Discipline of the Troops of the United States*, first promulgated in 1778, republished in 1794, and known as the Blue Book. Specific instructions for captains included the injunction that a company commander "must be very particular in the daily and weekly inspections of his men, causing all deficiencies to be immediately supplied; and when he discovers any irregularity in the dress or conduct of any soldier, he must not only punish him, but the non-commissioned officer to whose squad he belongs."[12]

One can easily assume that such rules and regulations were relaxed at frontier outposts and garrisons, but evidence in general orders of the period tends to refute this. Fort Wayne, Indiana, which in 1808 was still a frontier outpost, was subject to this reminder from its commanding officer on October 23 of that year:

> An Officer on duty should never go out of his quarters, without being dressed in full uniform, not forgetting his side arms. It may be thought by some that this is unnecessary at a post so remotely situated as this; but it is evident that a contrary practice will lead the young and inexperienced officers into an erroneous, and neglegient mode of doing duty; which will not only be a disgrace to them, but to their superior officers under whose immediate charge they have been placed.[13]

Army regs and the Corps of Discovery

Uniformity, no matter where, when, or under what circumstances, was integral to the operation of all military forces and the training of all young officers, including Meriwether Lewis and William Clark. So what can be said regarding how the men of the Corps of Discovery may have worn their hair and cut their whiskers during the expedition?

Lewis believed fervently in the rules and regulations of the U.S. Army. It is almost certain that Lewis would have enforced all of these rules on the upstream voyage of 1804, from Camp River Dubois to Fort Mandan. During this leg of the trip, courts martial were frequent, and no act of disobedience or negligence of duty went unnoticed or unpunished. Lewis was forging a team that could successfully complete its daunting mission. He needed to test each man's ability to follow orders without question and conform to military rules and protocol. The strict regimen winnowed out trouble makers like John Newman and Moses Reed, and by the time the expedition left Fort Mandan for *terra incognita*, Lewis had a team he could trust.

Given this emphasis on military discipline, it seems certain that as long as there were razors and soap and sufficient time to apply them, the Corps of Discovery maintained a clean-shaven appearance. There is no indication

that they ever ran out of razors or soap. Time proved the crucial factor.

Did the men continue to crop their hair and shave their beards as they proceeded beyond Fort Mandan? Again, I believe that they did, where possible. The men may have looked a little scruffy (and Lewis may have relaxed discipline a bit) as they traveled through some of the more demanding portions of their route, but each time they completed one of these sections they arrived at a camp where they stayed long enough to rest, repair clothing, make moccasins, and stock up on food. So, although the men may have gone longer than three days between shaves, or even a month between haircuts, they had ample time to bring their appearance back into conformity with military regulations at the Marias River Camp, the Upper and Lower Portage Camps at Great Falls, the Shoshone village near Tendoy, Idaho, and in the Nez Perce villages after crossing the Bitterroot Mountains.

NATIONAL PARK SERVICE

When painted by Charles Willson Peale in 1808, Clark still wore his hair fairly short, but he was beginning to revert to the longer style he favored.

There are virtually no references in the journals to beards or hair or whether they were allowed to grow or were cut. Admittedly, this makes most of this essay conjectural, for it is based on known military protocol, the character of Meriwether Lewis as historians understand it, and the circumstantial evidence—or nonevidence—contained in the journals. It seems likely that if the hair or beards of the men were being worn in an uncharacteristic fashion, this fact would have been mentioned, particularly by military men like Lewis, Ordway, Gass, and Whitehouse.

The only journal references to the hair length of expedition members concern Lewis, Clark, and York, and all were made within a few days of one another, in late summer of 1805.

The first reference is to the events of August 16, after Lewis, leading a small advance party, made contact with the Shoshones and convinced their chief, Cameahwait, and some of his warriors to accompany him in his attempt to rendezvous with Clark and the main party. The Shoshones were suspicious, fearing the whites might lead them into an ambush by their enemies the Atsina, and exchanged some items of clothing with Lewis and his men in an attempt to disguise them as Indians. Cameahwait gave Lewis a tippet of ermine tails, and Lewis reciprocated by placing his cocked hat on the chief's head. The other men followed Lewis's example, so that all of them were "completely metamorphised" into Indians. Noting how he must have looked, Lewis remarks that "my over shirt being of the Indian form my hair dishivled and skin well browned with the sun I wanted no further addition to make me a complete Indian in appearance."[14]

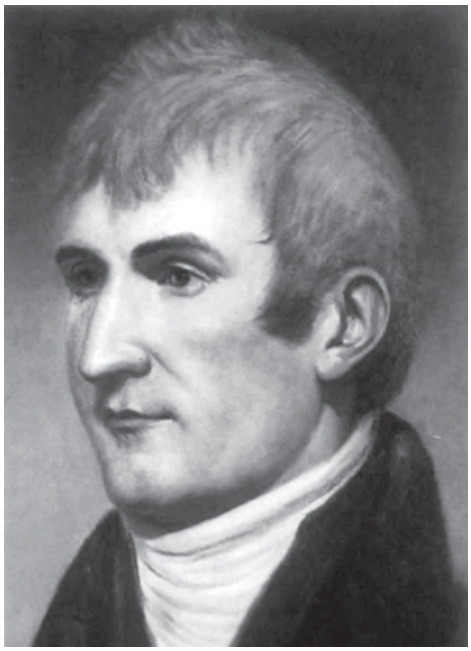
To be "dishivled" enough to be seen at a distance, Lewis's hair must have been shaggy—if not downright long—by military standards. The fact that he makes a point of mentioning that his hair is disheveled suggests this was not its usual state. Note, too, that the exchange of clothing was all it took to make the whites "Indian in appearance." The whites must have been clean shaven and the Indians must have had short hair for the two groups to blend so well. Most Indian men plucked their whiskers, and Lewis states that the Shoshones' hair was cut short as a sign of mourning.[15]

Later in the same entry, Lewis relates that "some of the party had also told the Indians that we had a man with us who was black and had short curling hair."[16] This description of York indicates that his hair was being kept short, even during this extended march over difficult terrain.

On the following day (August 17), Clark's party was reunited with Lewis's. Clark's journal entry describing his meeting with Cameahwait suggests that his hair was also longer than warranted by military regulations: "the Main Chief imedeately tied to my hair Six Small pieces of Shells resembling *perl*, which is highly Valued by those people and are prcured from the nations resideing near the *Sea Coast*."[17] Unless Clark's hair was at least a few inches long, it would have been difficult if not impossible to tie pieces of shells into it.

Several weeks later, after the explorers had crossed Lost Trail Pass and were camped with Salish Indians on the upper Bitterroot River, Private Joseph Whitehouse described a conversation with their hosts conducted through sign language: "they tell us that we can go in 6 days to where white traders come and that they had Seen bearded men who came [to] a river to the North of us 6 days

march."[18] This passage, with its reference to "bearded men," indicates that conspicuous facial hair—whether full beards or scruffy "five o'clock shadows"—was an identifying feature of white men generally. Although it doesn't address the question of beards on Lewis and Clark's men, the oral history of the Nez Perces—the next tribe they encountered, after the brutal eight-day crossing of the Bitterroot Mountains—suggests they were unshaven when the expedition arrived at the Nez Perces' encampment at Weippe Prairie. That history refers to them not as men but as "creatures" with light skin and hair on their faces.[19] At this point the explorers were near starvation and physically at their lowest ebb, and given the circumstances it is probable that most of them hadn't shaved for a week or longer. As they slowly regained their health among the hospitable Nez Perces, it is likely that they resumed shaving and perhaps trimmed their hair before their descent of the Clearwater, Snake, and Columbia rivers.



NATIONAL PARK SERVICE

The 1807 Peale portrait of Lewis shows him *sans* queue and now fashionably coiffed "à la Titus," with his hair short and brushed forward.

During their miserable, wind-and-rain lashed month in the Columbia estuary, the explorers may also have let their appearance go once more. But in December 1805, after completing the construction of Fort Clatsop, Lewis issued an order that re-established military discipline. The order, which spelled out the duties of the guards, relations with the local Indians, security within the fort, and disposition of the expedition's tools, has an air of military authority and crispness missing since the Fort Mandan winter.[20] This order put the Corps of Discovery back on a firm military footing, and although unstated, virtually assured the shaving of beards and the cropping of hair to regulation length. It is certain that the captains themselves would have conformed to the order to set an example for their men. Only Charbonneau and Drouillard, as civilian interpreters, and York, who of course was not in the army and whose hair, as we have seen, was kept short anyway, would have been exempted.

Journal entries during the return trek make no mention of hair length. While homewhard bound the expedition suffered none of the severe hardships of the sort experienced in 1805, and it seems unlikely that the captains would have relaxed military dictates about hair and beards, particularly within Clark's detachment on the Yellowstone. The descent of the Missouri River from the Mandan villages to St. Louis during the late summer of 1806 was swift and took up longer portions of the day as the men strained at their paddles to return to civilization. During these weeks they once again may have acquired a scruffy look, but it seems certain that once they were back in the settled regions of Missouri their commanders would have insisted on proper grooming.

Pictorial references to the hair length of the captains are available for the period immediately following the expedition. These are the Peale portraits of Lewis and Clark, executed in 1807 and 1808, respectively. In these companion portraits, the most famous made of the two men, both explorers are shown with short hair. Two Saint-Mémin portraits of Lewis that were probably executed before the expedition show him with a queue [see p. 23], as do portraits of Clark painted after the expedition by Gilbert Stuart, Chester Harding, and George Catlin—Catlin's made as late as 1832.[21] The Stuart portrait, completed in 1810, just two years after the Peale portrait, shows Clark with a traditional 18th-century hairstyle—long, full, and with a queue—whereas the 1808 Peale portrait shows him with a shorter style, similar to what he must have worn on the expedition. The portraits make it clear that Clark preferred his hair cut long, and that he eventually reverted to this style after his return to civilian life.

Evidence in the journals is paltry regarding hair length and beards, but what we know about military protocol, Meriwether Lewis's enforcement of regulations, and the pride of the U.S. Army, which at the time emphasized personal appearance and uniformity at least as strictly as it does today, supports the view that short hair and cleanshaven faces were the norm for the greater part of the trek.

Robert J. Moore is the historian at the Jefferson National Expansion Memorial, in St. Louis.

Notes

1 The following original documents in the collections of the National Archives and Records Administration (NARA) include general orders for the U.S. Army at the time of Lewis and Clark

which emphasize uniformity of appearance and discipline: Record Group 94, Company and Orderly Book, First Regiment of Artillerists and Engineers, Fort Johnston, North Carolina, 1795-1813; Record Group 98, No. 10, Records of the Garrison at Fort Independence, Boston Harbor, 1803-1815; and No. 128, Company Book, Capts. John Symmes and Eli B. Clemson, 1807-1815. See also Amos Stoddard's Company Book, Louisiana Territory Collection, Military Command Records, Adjutant's Records, 1803-1805, Missouri Historical Society Archives; Hawkins' Orderly Book, No. 1, Hazen's Regiment, Hand's Brigade, Historical Society of Pennsylvania. Other period primary sources include Jay Luvaas, ed., *Frederick the Great on the Art of War* (New York: The Free Press, Collier-Macmillan, Ltd., 1966), pp. 78-79, 144-145 and 153; Baron Friedrich Wilhelm Von Steuben, *Baron von Steuben's Revolutionary War Drill Manual, A Facsimile Reprint of the 1794 Edition* (New York: Dover Publications, 1985), pp. 124-138 and 146; William Duane, *A Military Dictionary, or Explanation of the Several Systems of Descriptions of Different Kinds of Troops, Infantry, Artillery, Cavalry, the Principles of Fortification, and All Modern Improvements in the Science of Tactics* (Philadelphia, published by the author, 1810); and Bert Joseph Griswold, *Indiana Historical Collections, Vol. XV, Fort Wayne, Gateway of the West, 1802-1813, Garrison Orderly Book, Indian Agency Account Book* (Indianapolis: Historical Bureau of the Indiana Library and Historical Department, 1927). Secondary sources which address this topic include Jack D.L. Holmes, "Military Uniforms in Spanish Louisiana, 1766-1804," *Military Collector and Historian*, Vol. XVII, No. 4, Winter 1965; John Keegan, *The Face of Battle* (New York: Viking Press, 1976), pp. 52-54 and 165-192; Harold L. Peterson, *The Book of the Continental Soldier* (Harrisburg, Penn.: Stackpole Books, 1968), pp. 19-21.

2 See the General Orders of November 9, 1777, which enjoin the adjutants and brigade majors to let no man appear on the parade ground "whose appearance is not as decent as his circumstances will permit; having his beard shaved, hair combed, face washed and cloaths put on in the best manner in his power." This order is reprinted in John C. Fitzpatrick, ed., *The Writings of George Washington from the Original Manuscript Sources, 1745-1799* (Washington, D.C.: U.S. Government Printing Office, 1931-1944), Vol. 15, p. 31. See also Hawkins's Orderly Book, No. 1, Hazen's Regiment, Hand's Brigade, March 1, 1780, original in the Historical Society of Pennsylvania, which specifies that the men are to appear "with faces and hands washed, their Beards close shaved, their hair combed and tied if long enough."

3 Record Group 98, NARA)\, No. 2, Vol. 162, Orderly Book of the Adjutant at Fort Adams, 3rd Inf. 1801-1802; and Orderly Book, Capt. Richard Sparks, 2nd Inf. 1802-1803.

4 Ibid. See also Standing Orders, 1803, Record Group 98, NARA, No. 10, Records of the Garrison at Fort Independence, Boston Harbor, 1803-1815, p. 68.

5 Ibid.

6 James Ripley Jacobs, *The Beginning of the U.S. Army, 1783-1812* (Port Washington, N.Y.: Kennikat Press), p. 262.

7 Standing Orders, 1803, Record Group 98, NARA, No. 10, Records of the Garrison at Fort Independence, Boston Harbor, 1803-1815 p. 64.

8 Record Group 98, NARA, No. 2, Vol. 162, Orderly Book of the Adjutant at Fort Adams, 3rd Inf. 1801-1802; and Orderly Book, Capt. Richard Sparks, 2nd Inf. 1802-1803.

9 Ibid.

10 Donald R. Hickey, "The United States Army Versus Long Hair: The Trials of Colonel Thomas Butler, 1801-1805," *The Pennsylvania Magazine of History and Biography*, October 1977, pp. 473-474. A transcript of the charges, specifications and verdict of the court martial may be found in Amos Stoddard's Company Book, pp. 218-220, Missouri Historical Society Archives. For background on the political aspects of the Butler affair, see Hickey; also Arlen J. Large, "Captain Lewis Gets a Haircut," *We Proceeded On*, August 1997, pp. 14-17.

11 Orderly Book, NARA, Record Group 98, Eli Clemson's Company, 1st Infantry Regiment, 1807, which includes the Standing Orders of the 1st U.S. Infantry of 1801. See especially the portraits of Lewis and Clark by Charles Willson Peale, completed after the expedition and reproduced in nearly every publication about the expedition (the originals are on display at Independence National Historical Park in Philadelphia); Zebulon Pike, ca. 1807, also by Peale and displayed in the same building in Philadelphia; portraits by Charles B.J. Févret de Saint-Mémin, reproduced in Ellen G. Miles, *Saint-Memin and the Neoclassical Profile Portrait in America* (Washington, D.C.: National Portrait Gallery and Smithsonian Institution Press, 1994), specifically portraits 9:11 of Capt. Mulford and number 13 of Capt. Addison Bowles Armistead of the U.S. Artillery, number 785 of John Stanard, number 649 of Ens. Thomas Perkinson of the U.S. Infantry, and number 828 of Lt. Col. Anne-Louis de Tousard of the Corps of Artillerists and Engineers. See also the portrait of Capt. Daniel Bissell painted ca. 1802 and owned by the St. Louis County Department of Parks and Recreation.

12 Von Steuben, pp. 135-136.

13 Bert Joseph Griswold, ed., *Indiana Historical Collections, Vol. XV, Fort Wayne, Gateway of the West, 1802-1813, Garrison Orderly Book, Indian Agency Account Book* (Indianapolis: Historical Bureau of the Indiana Library and Historical Department, 1927), p. 277.

14 Gary E. Moulton, ed., *The Journals of the Lewis & Clark Expedition* (Lincoln: University of Nebraska Press, 13 volumes, 1983-2001), Vol. 5, p. 104.

15 Ibid., pp. 121-122. Lewis states that Cameahwait's hair was "cut close all over his head."

16 Ibid., p. 106.

17 Ibid., p. 114.

18 Moulton., Vol. 11, p. 299.

19 This reference is based on personal conversations with Otis Halfmoon of the Nez Perce tribe.

20 Moulton, Vol. 6, pp. 156-158 (Lewis, January 1, 1806).

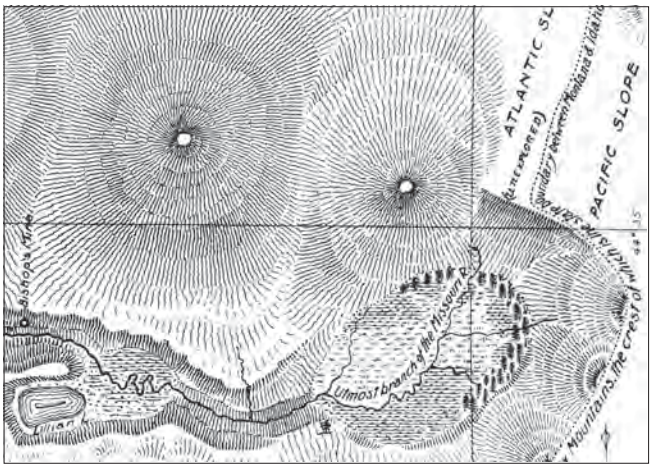
21 Large points out that the Saint-Mémin portraits are not dated but argues pursuasively that they were executed in 1802 and 1803. This would have been after Wilkinson's ban on long hair, but Captain Lewis would have been exempt from the order while serving on detached duty as Jefferson's secretary.

The Utmost Reaches of the Missouri

Two latter-day explorers describe their quest for the river's "distant fountain," 100 miles southeast of Lemhi Pass (Lewis missed it, which was just as well)

by Donald F. Nell and Anthony Demetriades

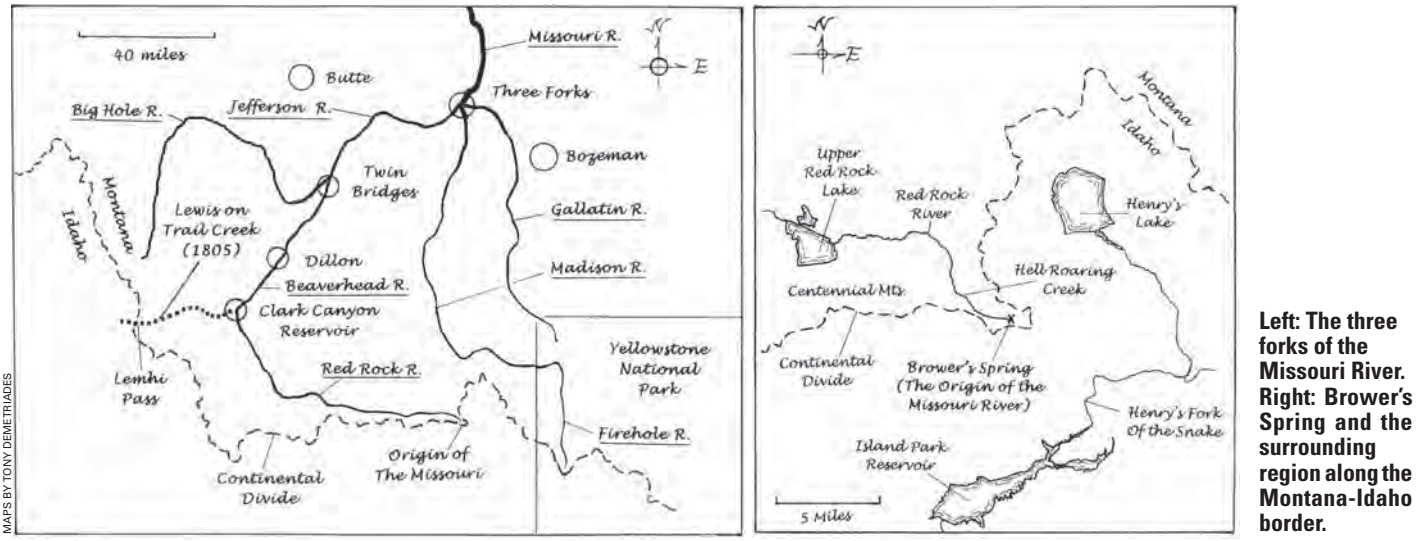
On August 12, 1805, Meriwether Lewis and three other members of the Corps of Discovery were approaching the Continental Divide at Lemhi Pass in present-day southwestern Montana. They were following an Indian trail that paralleled what Lewis called a "little rivulet," known today as Trail Creek. Soon the rivulet became so small that a man could easily straddle it. Private Hugh McNeal did just that and, undoubtedly thinking of the weeks upon weeks of hard poling, rowing, and cordelling behind him, "thanked his god that he had lived to bestride the mighty & heretofore deemed endless Missouri." Two miles farther on they came to the tiny spring that was the rivulet's source—and as far as Lewis could determine, "the most distant fountain of the waters of the mighty Missouri in surch of which we have spent so many toilsome days and wristless nights."[1]



Detail from Jacob Brower's 1896 map, the first to accurately depict the Missouri's source, near Red Rock Pass in southwest Montana.

Lewis's mission included finding answers to geographical questions posed by his patron, Thomas Jefferson. Did the Missouri offer a practical route to the Pacific? If so, could this route be completed by a short portage between the headwaters of the Missouri and those of the Columbia? And was the Missouri's source a spring, a swamp, a pond, or possibly the "inland sea" that cartographers had placed, with acrobatic abandon, astride the spine of the continent?

Lewis and his companions appeared to have the answer to the last question immediately at hand. It must have been deeply satisfying to drink from this silvery trickle that gave birth to the rolling, roiling giant against whose currents they had labored since leaving civilization 15 months before. But Lewis was wrong in his assumption that this lovely little spring was the source of the Missouri, which he had missed by one hundred miles.



MAPS BY TONY DEMETRIADES

Left: The three forks of the Missouri River. Right: Brower's Spring and the surrounding region along the Montana-Idaho border.

The question of the true source of the Missouri lies at the junction of history, geography, and human curiosity. Even if the matter were purely academic, it would still occupy a prominent place in our thoughts—people like to tie things together in neat packages and clear up seemingly unimportant geographical questions, whether they concern the source of rivers, the depth of oceans, or the heights of mountain peaks. The question of the Missouri's source, however, is a bit more than academic, for history might have been very different had Lewis and Clark actually found it. For one thing, they might have missed their rendezvous with the Shoshone Indians, whose horses were crucial to crossing the Bitterroot Mountains.

On the surface it is a question one can easily finesse, just as Lewis did on July 28, 1805, at the Three Forks of the Missouri. In his journal that day he wrote, "Both Capt. C. and myself corrisponded in opinon with rispect to the impropriety of calling either of these [three] streams the Missouri and accordingly agreed to name them after the President of the United States and the Secretaries of the Treasury and state."[2] In other words, the Missouri by default starts where its three confluents—the Jefferson, the Gallatin, and the Madison—end, at today's Headwaters State Park, near the town of Three Forks, Montana.[3]

Any modern map purchased at a bookstore or service station confirms that the Missouri indeed "begins" at the Three Forks, just as Lewis stated and as cartographers ever since have decreed.[4] But the "source" of a river as more strictly defined by geographers involves the notion of a river system, or watershed (the area drained by the main stream and its many tributaries). In this context, the length of a river is the farthest distance a molecule of water must travel to reach the river's mouth, and the source of the river is where that molecule begins its journey.

A glance at a map of Montana easily reveals—without the aid of any statistical tables—that the Jefferson is the longest of the Missouri's three forks, as well as the one farthest west. A map also shows that, in the cartographer's sense, the Jefferson itself starts where the Big Hole and Beaverhead rivers come together, at present-day Twin Bridges, Montana. After ascending the Jefferson, the Corps of Discovery followed the Beaverhead south to its starting point on the map, the junction of Horse Prairie Creek and Red Rock River. In August 1805, Lewis and his companions, who were well ahead of the main party, turned up Horse Prairie Creek, which flows in from the west, and followed it to Trail Creek and Lemhi Pass. Had they continued up Red Rock River—the Beaverhead's principal fork—and followed that tributary to its uppermost point, they would have passed through the Centennial Valley and eventually arrived at a spring issuing from a high mountain slope.

Located 21 miles west-southwest of West Yellowstone, Montana, that spring is the true cradle of the Missouri, a fact that was not firmly established until nearly a century after Lewis and Clark passed through Montana. It was Jacob V. Brower, an amateur explorer and archaeologist from Minnesota, who set the record straight in 1896 with the publication of his book *The Missouri and Its Utmost Source.*[5]

The senior author of this article (Nell) learned of Brower's book some years ago when Bill Sherman, a former president of the Lewis and Clark Trail Heritage Foundation who lives in Portland, Oregon, sent him a copy of the second (1897) edition, which he had purchased at a gun show for five dollars.

Brower's narrative relates his efforts, during the summer of 1895, to pinpoint the Missouri's source in the Cen-

tennial Valley. With his host, local rancher William N. Culver, he ascended Red Rock River through Hell Roaring Canyon and up into a subalpine valley. Beyond a small lake, he wrote, "we suddenly came in full view of a hole in the summit of the Rocky Mountains" from which issued a "little rivulet, two feet wide and scarcely two inches in depth, drawing its utmost supply from the inner walls of the mighty and towering uplifts surrounding it."[6] As a record of their visit, Brower left a copper plate inscribed with the date of discovery, August 29, 1895.

Having spent many of his boyhood summers close to the Centennial Valley, Bill Sherman was excited by Brower's book and the details it provided. So were others with whom he shared this information. It appeared that the spring discovered by Brower—"this unique, most distant, and peculiar source of the Missouri"[7]—could be reached on foot. Perhaps, too, the copper plate placed there by Brower could still be found.

John Montague, another former Foundation president who lives in Portland, after learning about Brower's explorations visited the Centennial Valley in 1988 or 1989 (neither he nor I can recall the exact year), and with his fellow Delta Air Lines pilot G.L. Perry hiked up to the spring. To their surprise they found a mound of rocks, and under this cairn a glass jar placed there by two other adventurers several years before. (The jar held a piece of paper declaring their intention to canoe the entire length of the greater Missouri-Mississippi system, from near this spot all the way to New Orleans, a feat they apparently accomplished.) To commemorate their own visit, John placed his Foundation business card in the jar. He put the jar back in place and rebuilt the cairn over it.

COURTESY DON NELL

The authors' group at Brower's Spring in July 1990, rebuilding the rock pile covering the jar with their names.

John related these events to the senior author, who naturally bristled with impatience to make the trip himself. It took him a year or so to do it, but he eventually organized his own little Corps of Rediscovery and, with 15 other brave souls from the Foundation's recently formed Headwaters Chapter (based in Bozeman, Montana), made his prilgrimage in the following summer.

The area we set out to explore lies within the jurisdiction of two Ranger districts of the U.S. Forest Service. The rangers we spoke to were unfamiliar with Brower's book or its significance and expressed concern about our climbing in rugged terrain noted for sudden weather changes. The Centennial Mountains, which border the valley on its south side, are unique in Montana: they run east-west rather than north-south, an alignment that encourages the incubation of severe storms producing rain, lightning, hail, and snow any month of the year.

Day of discovery

We left our base in Lima, Montana, at the western end of the Centennial Valley, on the morning of July 10, 1990. Our caravan drove east on U.S. 15, then picked up Red Rock Pass Road, which we took up the valley to its junction with the Continental Divide Trail. We parked nearby to begin what turned out to be a hike of about three miles into Hell Roaring Canyon. At a point where the trail veers west we left it and followed Hell Roaring Creek to its source. With the aid of a map from Brower's book and several modern topographic maps we found the spring without much difficulty—a trickle oozing out of a bed of moss—and the rock cairn that John Montague had told us about. Under the rocks we found the jar. We added a slip of paper inscribed with our names, then carefully reburied the jar.

Unfortunately, we were unable to locate Brower's copper plate, in part because our search for it was cut short by a medical emergency—a broken ankle suffered by John E. "Jack" Taylor, a well-known Lewis and Clark guide from Helena. The rest of the day was a series of adventures. A young couple took off on a 20-mile trip to fetch help from the closest Ranger station. In short order a helicopter arrived but was driven off by a thunderstorm. We wound up helping Jack down to the trail head and loading him into a camper. While two of us drove him to the Bozeman hospital via Red Rock Pass and the Gallatin Valley, the rest of us returned to our motel in Lima.

Despite the medical mishap and a thorough drenching by the thunderstorm, we felt exhilarated by our ex-

perience on the mountain. It had been a supreme moment. Like McNeal 190 years before, we too had straddled a creek on the Continental Divide. And we knew that our creek, unlike McNeal's, was the true source of the Missouri.

The Missouri system

Two centuries after Lewis and Clark named them, the three beautiful rivers that converge to form the Missouri still wind their glistening ways through some of America's most scenic landscapes. From east to west, they are the Gallatin, one of the nation's few remaining undammed rivers; the Madison, a world-renowned trout fishery; and the Jefferson, where, several years after the Corps of Discovery's return, Blackfeet Indians killed two of its former members, John Potts and George Drouillard, and set a third, John Colter, running naked for his life.

The Gallatin rises in Yellowstone Park's Gallatin Lake, some 12 miles southwest of Mammoth Hot Springs. Gallatin Lake's altitude is about 9,000 feet, and its geographic coordinates are 110° 53″ W by 44° 51″ N. After issuing from the lake, the river carves its way north through Gallatin Canyon and past the ski resort of Big Sky and Bozeman to Three Forks. Its total length is 115.4 miles.[8]

DONNA DEMETRIADES

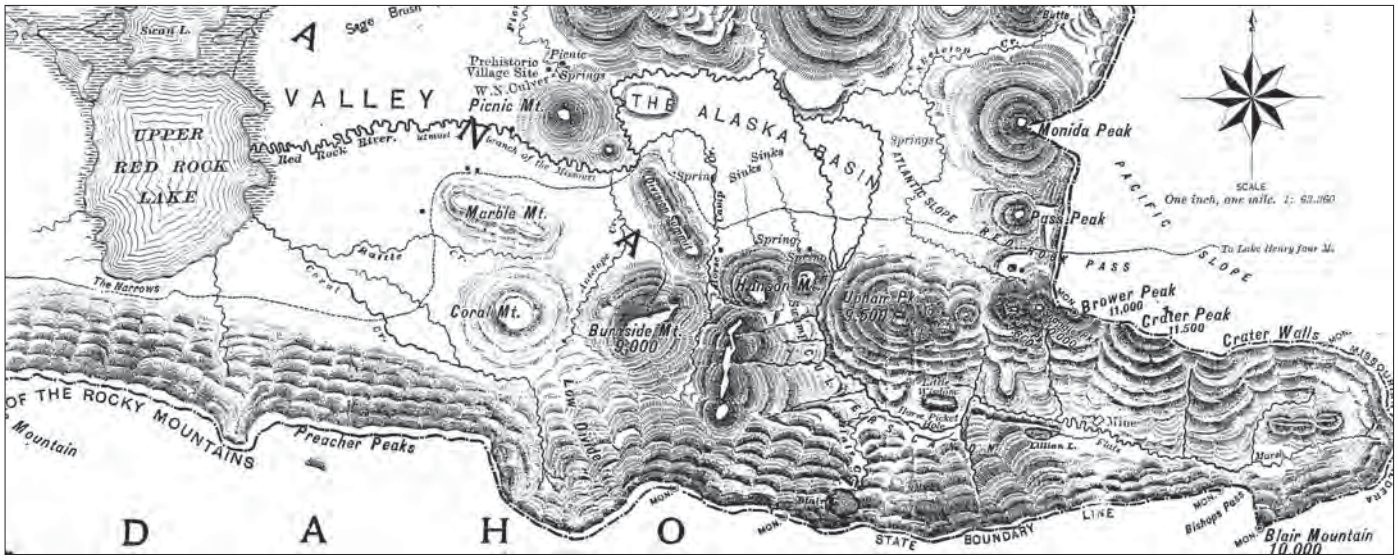
Tony Demetriades in August 2002, posting a historical marker on his property. Hell Roaring Creek heads in the mountains behind him .

The Madison River also originates in the Park. Its source, which lies at 8,500 feet, is Madison Lake, about seven miles south of Old Faithful geyser. Madison Lake's coordinates are 110° 52″ W by 44° 21″ N. The stream discharging from the lake is called the Firehole River for its many hot springs. The Firehole flows north about 20 miles. It passes Old Faithful, Yellowstone's most famous geyser, and joins the Gibbon River coming in from the east; the Madison proper begins at their junction. From Madison Lake to Three Forks the river is 177.3 miles long.

The Jefferson, as noted, issues from what we have chosen to call Brower's Spring (to our knowledge, cartographers have not officially named it). Brower's Spring lies at roughly 8,500 feet, and its coordinates are 111° 29″ W by 44° 33″ N. The Jefferson begins as Hell Roaring Creek, named for the noise of its riffles and falls as it passes through a gap that Brower named Culver's Cañon for his co-explorer. After entering a subalpine valley, Hell Roaring Creek joins Red Rock Creek, which flows west into Upper and Lower Red Rock Lakes. The larger stream that emerges from the lower lake is called Red Rock River. It bears north through the Lima Reservoir and past the town of Lima, then joins Horse Prairie Creek at Clark Canyon Reservoir (whose waters cover the site of the Corps of Discovery's Camp Fortunate). Below Clark Canyon Reservoir the river becomes first the Beaverhead, then, at its junction with the Big Hole just north of Twin Bridges, the Jefferson. The river's total distance from Brower's Spring to the junction with the Madison, at Three Forks, is 298.3 miles.[9]

The main stem of the Missouri runs 2,341 miles from Three Forks to its junction with the Mississippi, north of St. Louis.[10] From there, a molecule of water that began it journey to the ocean at Brower's Spring would have to travel another 1,003 miles to reach New Orleans and an additional 103 miles after that to reach the Gulf of Mexico. The total river distance from Brower's Spring to the ocean is 3,745 miles, making the Missouri system (including the main stem of the Mississippi) the world's third longest, after the Nile and the Amazon.[11]

Meriwether Lewis never saw Brower's Spring or knew of its existence. For the captain, the "distant fountain" at the head of Trail Creek was the source of the Missouri for practical purposes if not in fact. From there on that morning of August 12, 1805, it must have taken him only a few minutes to go from the spring to "the top of the dividing ridge from which I discovered immense ranges of high mountains still to the West." However imposing or intimidating those mountains must have seemed, he had reached the Continental Divide. The going would still be perilous, but by early November they would at last be camped at the mouth of the Columbia River. The spring at Trail Creek is not really the source of the Missouri, but it was an important milestone nonetheless, and for the Corps of Discovery it would do. ■



Detail from an 1897 map by Jacob Brower. He named a number of geographical features, but many of the names he bestowed have been changed.

Don Nell lives in Bozeman, Montana. He is a past president of the Foundation and remains active in regional Lewis and Clark activities. Anthony Demetriades, an emeritus professor of engineering at Montana State University and a past director of the Gallatin Lewis and Clark Bicentennial Association, lives in the Centennial Valley, just a few miles from Brower's Spring.

Notes

1 Gary E. Moulton, ed., *The Journals of the Lewis & Clark Expedition*, 13 volumes (Lincoln: University of Nebraska Press, 1983-2001), Vol. 5, p. 74. See also Donald F. Nell and John E. Taylor, *Lewis and Clark in The Three Rivers Valleys* (Tucson: Patrice Press, 1996), p. 76.

2 Moulton, p. 7; Nell and Taylor, p. 35.

3 Albert Gallatin was secretary of treasury and James Madison secretary of state. The Gallatin is the easternmost of the three rivers to enter the Missouri proper, followed by the Madison and the Jefferson.

4 See, for example, *Montana Atlas and Gazetteer*, 2nd Edition (Yarmouth, Me.: Delorme, 1997), p. 40. The Gallatin, whose mouth has shifted east over the years, now enters the Missouri approximately one mile downstream of the junction of the Madison with the Jefferson.

5 Jacob V. Brower, *The Missouri River and Its Utmost Source: Curtailed Narration of Geologic, Primitive and Geographic Distinctions Descriptive of the Evolution and Discovery of the River and Its Headwaters* (St. Paul: Pioneer Press, 1896). This edition includes the map shown on page 29; the more detailed map shown above was pubished in an 1897 edition. Brower (1844-1905) led a multifaceted life. A soldier and sailor during the Civil War, he later served as a Minnesota legislator and was the president of a railroad and owner of several newspapers. See the Web site http://tigger.stcloudstate.edu/~brower/brower.html.

6 Brower, pp. 112-113. Brower's use of the term "little rivulet" echoes Lewis's journal entry of August 12, 1805. This is probably a coincidence, but maybe not. Elliott Coues's edition of the Lewis and Clark journals had been published in 1893, and Brower refers to it on p. 71. The Coues edition is based on the 1814 paraphrase of the journals by Nicholas Biddle. In his description of Lewis's ascent of Trail Creek, Coues does not use the term "little rivulet," but in a footnote he quotes Lewis's entry verbatim, and it's reasonable to assume that Brower had read this passage. In the same footnote Coues makes it clear that the spring at the head of Trail Creek could not be the source of the Missouri, which instead must be "many miles eastward … at the highest fountain which feeds Red Rock lake." See Elliott Coues, ed., *The History of the Lewis and Clark Expedition*, 3 volumes (New York: Francis P. Harper, 1893), Vol. 2, p. 484.

7 Ibid., p. 113.

8 Here and in the following two paragraphs, the stream mileages are taken from *River Mile Index of the Missouri River* (Helena: Water Resources Division, Montana Department of Natural Resources and Conservation, January 1979), pp. 105-142. For their assistance the authors thank James Kalitowski of the NRSC's Bozeman office and Gerry Daumiller of the Montana Natural Resource Information System.

9 Ibid. According to the DNRC report, the main stem of the Jefferson contributes 83.5 miles to its total length, the Beaverhead 80.4 miles, and the Red Rock-Hell Roaring Creek system 134.4 miles.

10 This is the Missouri's "official" length, but readers should be aware that recorded lengths of the Missouri and, for that matter, all rivers may vary according to the methodologies of geographers and the shifting of river beds. See *Missouri River Environmental Assessment Program* (Lewistown, Mont.: Missouri River Basin Association Report, 1996).

11 David Crystal, ed., *The Cambridge Factfinder*, 4th edition (Cambridge: Cambridge University Press, 2000), p. 42. The Mississippi begins at Lake Itasca, in northern Minnesota—a source confirmed by Jacob V. Brower in 1893, two years before he discovered the source of the Missouri. See Jacob V. Brower, *The Mississippi River and Its Source* (Minneapolis: Harrison & Smith, 1893). The Mississippi above its junction with the Missouri is about 1,070 miles long, less than half the length of the Missouri above its junction with the Mississippi.

A ramble through bear country with Lewis and Clark

Lewis and Clark among the Grizzlies: Legend and Legacy in the American West

Paul Schullery

Falcon / Globe Pequot Press
247 pages / $14.95 paper

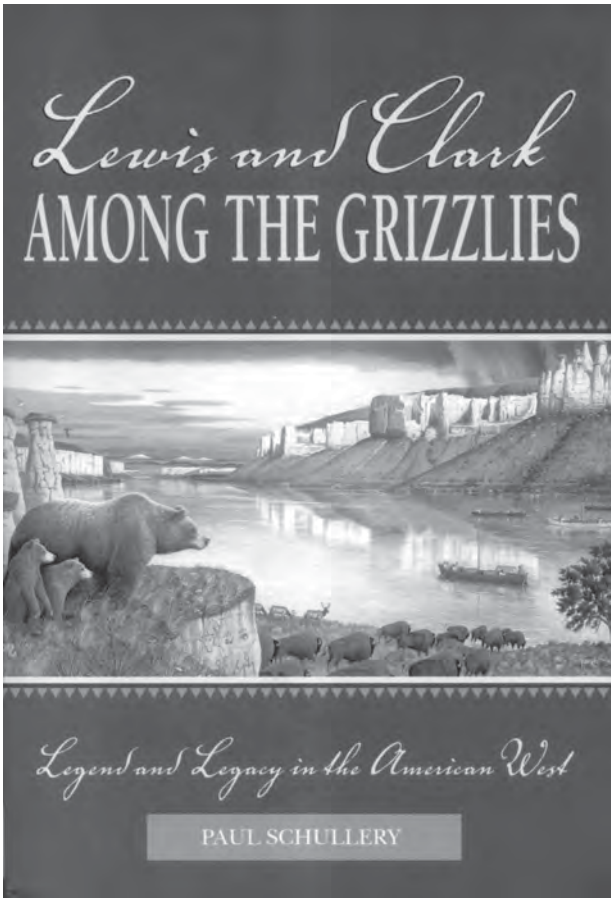
This book would make a good gift for someone keen about wildlife, hunting, or the outdoors but put off by thick volumes of western history and exploration. *Lewis and Clark among the Grizzlies* narrates all the encounters the explorers had with bears—62 sightings of grizzlies (by a conservative count) along with observations of black bears and evidence from skins, scat, and scuttlebutt along the trail from St. Louis to the Pacific and back.

This detailed information could make slow reading, but author Paul Schullery quickens the pace with lore and questions about biology, history, mythology, geography, and archeology. He repeats some good hunting stories and tall tales, and includes many apt illustrations. Having written and edited many books on the outdoors, he draws freely on his own experiences and those of friends in the field. He's not afraid to say "I" and to challenge many received assumptions by citing recent research.

The result is a conversational, even chatty ramble rather than a scholarly treatise. At his best, Schullery takes the reader along on armchair forays, chasing accurate information about particular incidents and their implications. He quotes all the available journals and so brings out new dimensions of the most famous bear stories. By tracing the distortions of hunters, naturalists, and editors, he reveals how errors and legends have grown over the years and clouded the sharp observations of the Corps of Discovery. At the heart of this book, of course, he follows the great hunt the expedition made in tracking grizzlies, confronting them, killing and measuring them, and watching new details about them emerge day after day.

Critical readers will note some omissions. *Lewis and Clark among the Grizzlies* does not, in fact, say everything that could be said on its topic.

It is odd, for example, that Schullery traces overblown notions of grizzly ferocity directly back to Lewis's experiences at the Great Falls, amplified by sensational hunting tales of the later 19th century. He makes no mention of another early sensation, Charles Willson Peale's exhibits at his famous museum in Philadelphia. In 1803, Peale purchased a "grisly coloured" bear, reputedly from the upper Missouri, and noted the ferocity of this species and its unnerving trait of pursuing men. Months later, this bear broke out of its cage. Peale shot it and sent a hind quarter to Thomas Jefferson, then mounted the skin and put it on display. In 1807, Jefferson returned the favor when he received two grizzly cubs from Zebulon Pike and forwarded them to Peale. As these bears grew they proved too hard to handle. One broke loose, rampaged through Peale's house, and was shot, and the other was killed as a precaution. Both these animals were mounted and displayed along with the many specimens Peale received from Lewis and Clark. The idea of grizzly ferocity was thus well advertised in the East before 1810.



Schullery also stresses the legendary or mysterious nature of grizzlies—the largest, most dangerous predators roaming the American West. He refers at times to mythic literature, such as *Beowulf* and the Arthurian legends. But he ignores an American classic: William Faulkner's novella *The Bear*, a brilliant hunting story about a huge black bear that embodies American wilderness.

These criticisms, however, may reveal a strength in Schullery's book. In the main he keeps his eyes trained on western grizzlies, the journal records, and up-to-date science. Readers will have various opinions about the matters he discusses, and will be forced to think again with better information. In this light, his book makes a neat introduction to Lewis and Clark as members of the Foundation know them. It traces a single, exciting thread of the expedition experience. Yet it points to the many kinds of learning the captains touched and improved, and the many kinds of questioning we still practice in following their footsteps.

—Albert Furtwangler

The captains as medical men: doing the best with what they knew

Or Perish in the Attempt: Wilderness Medicine in the Lewis & Clark Expedition

David J. Peck

Farcountry Press
352 pages/$24.95 hardcover

Dr. Eldon G. Chuinard's landmark study, *Only One Man Died: The Medical Aspects of the Lewis and Clark Expedition* (1979) is now complimented by *Or Perish in the Attempt: Wilderness Medicine in the Lewis & Clark Expedition*, by Dr. David J. Peck.

An authority on wilderness medicine, Peck presents the medical problems faced by the Corps of Discovery and its two primary dispensers of medical care, Meriwether Lewis and William Clark. He describes the illnesses and injuries as the two captains saw them, then offers his own observations concerning the validity of their diagnoses and treatments.

Blood letting and the use of cathartics for patients with dysentery are just two of many examples of the captains' methods that make Peck and other modern practitioners tremble. The author reminds us, however, that they did the best they could given the circumstances and the state of medical knowledge at the time. He also suggests that curing an ailment or at least relieving its symptoms can owe as much to the "laying on of hands" as it can to scientifically valid diagnosis and treatment. This placebo effect probably helped "cure" Bratton's chronically bad back and may also account for some of the effectiveness of the captains' treatment of Indians they met along the trail. As Peck reminds us, their ministrations—especially those of Clark—by enhancing tribal diplomacy helped ensure the corps's survival.

Any student of Lewis and Clark medicine attempting modern diagnoses of illnesses encountered by the captains must resort to informed guesswork. Peck acknowledges this and for the most part handles the problem well. Consider, for example, the nature of Sergeant Charles Floyd's fatal illness. Most authorities have attributed his death to peritonitis resulting from a ruptured appendix. Unfortunately, the journals provide so little evidence in this case that many causes are possible. Peck describes the symptoms and modern-day treatment of a burst appendix and speculates on how the captains may have treated Floyd's condition—bleeding and purging, if administered, may have hastened his demise. He then cites several alternative possibilities for what killed the young sergeant: peritonitis resulting from a stomach ulcer ("less probable, but certainly not beyond the scope of possibility") and a gastrointestinal form of tularemia, "an extremely nasty" bacterial infection.

In a chapter devoted to the explorers' post-expedition lives, Peck analyzes the various arguments over possible medical causes of Lewis's presumed suicide. He is skeptical that either malaria or syphilis may have been primary contributors, believing instead that he suffered from clinical depression exacerbated by probable addiction to alcohol and opium. Peck acknowledges that Lewis may have been murdered but believes the evidence points to suicide, whatever the cause.

The author concludes with two appendices, one tracing the development of medicine from the Greeks and the other focusing on the medicines of the expedition, a helpful reference. He credits the visionary Thomas Jefferson for initiating the expedition but doesn't mention that Jefferson also changed medical education in this country by encouraging scientific observation over theoretical speculation.

The occasional minor error creeps into the narrative: Jefferson was vice-president under John Adams, not secretary of state, a position he held under Washington; and Floyd was buried above the Missouri River, not above Floyd's River, which enters the Missouri about a mile upriver from his grave. Such nitpicking aside, *Or Perish in the Attempt* makes for informative reading. After finishing it, one might agree with an observation by Jefferson: "The patient treated in a fashionable theory sometimes gets well in spite of the medicine."

—White McKenzie Wallenborn, M.D.

E.S. Paxson's painting of Sacagawea, from *The Trail of Lewis and Clark*, by Olin D. Wheeler.

In Brief: Olin Wheeler; Larry McMurtry; Gass

• *The Trail of Lewis and Clark*, by Olin D. Wheeler. Originally published in 1904 as part of the Lewis and Clark centennial celebration and long out of print, Wheeler's history and travelog of the expedition retraces the explorers' steps from Camp River Dubois to Fort Clatsop and back. Wheeler stopped at all the principal landmarks, and it is interesting to juxtapose his early 20th-century descriptions of Floyd's Bluff,

the Great Falls, Pompeys Pillar, and other places with our knowledge of these sites today.

Wheeler was an accomplished journalist who knew the West intimately from writing and editing special publications for the Northern Pacific Railroad, and early in his career he worked with John Wesley Powell in his surveys of the Colorado River. His narrative includes thumbnail biographies of Lewis, Clark, and several other members the Corps of Discovery, and he fairly gushes over the role of Sacagawea, the "one heroine in this band of immortals." Wheeler also offers some interesting insights into the death of Lewis. Like most of his contemporaries, he leaned toward murder rather than suicide but recognized that the evidence on both sides was "circumstantial, contradictory, and indeterminate."

This new edition, by Digital Scanning, Inc., is the first reissue of Olin Wheeler's work since 1976. The print-on-demand digital technology used to produce it has some drawbacks—the roughly 200 illustrations are not as sharp as the original halftones, and because the text has been electronically scanned rather than photographed, the typography suffers a bit and is marred by the very occasional typo (e.g., Paul Allen, the editor of the 1814 Biddle edition of the L&C journals, is rendered "Paul Allek"). Like many other reissues of out-of-print Lewis and Clark books, this one lacks a modern introduction that would tell us something about the author and place the work in historical context. Biographical sketches of Olin Dunbar Wheeler (1852-1925) can be found on the Web and in a short article by Robert E. Lange in the Fall 1975 WPO.

Such quibbles aside, the availability of this important work at a reasonable price is a boon to L&C enthusiasts. (2-volume set, $49.95 paper, $89.95 hardcover; Digital Scanning, Inc.)

• *Sacagawea's Nickname: Essays on the American West*, by Larry McMurtry. This collection of 12 pieces originally published in *The New York Review of Books* reflects on the literature of the American West. The title essay and another, titled "America's Epic," deal at length with the Lewis and Clark journals as edited by Gary Moulton. McMurtry, a prolific novelist best known for *Lonesome Dove*, his saga of the open-range cowboy, regards the journals as the first and best of all western narratives, looming over later accounts "as the Rockies loom over the rivers that run through them." Although his take on the West is mostly ironic, McMurtry remains sympathetic to traditionally romantic and heroic views. As he notes, frontier scholarship has been engaged in "a long, hot debate between revisionists and triumphalists [and] the revisionists are solidly in command." The Lewis and Clark story is a reminder that the heroic still has its place in the story of westward expansion. In the journals, Lewis and Clark and the expedition's other diarists, observes McMurtry, "accomplished the one essential that writers must do: they brought the reader along with them, up that meandering river and over those snowy peaks." ($19.95, hardback; New York Review Books.)

• *Sergeant Patrick Gass, Chief Carpenter: On the Trail with Lewis & Clark*, by William Kloefkorn. This is not a biography of Patrick Gass—at least not in any conventional sense—but rather a collection of untitled free-verse poems that collectively form a narrative of the expedition as told in the voice of Gass. As the author states in his preface, "Though not a poet, Sergeant Gass nonetheless had a lot of poetry in him; he observed closely both flora and fauna, and his keen eye and wry sense of humor indicate that he had some of the essentials for the making of a bard."

Kloefkorn's "imaginative extrapolations" of what he knows of Gass through his journal and those of the captains and other members of the Corps of Discovery take us inside the mind of "a carpenter whose respect for timber and for the life-sustaining shelter that timber can provide was akin to passion." As Gass the poet-narrator puts it, "Give me time, a river, and a cluster of tools / and I will build us a house made of driftwood." ($12, paper; Spoon River Poetry Press.)

• *Best Little Stories from the Wild West*, by C. Brian Kelly. This fast-paced, episodic history of the American West comprises a series of brief narratives, starting with eight vignettes relating in one way or another to the Lewis and Clark Expedition. There are pieces on the two captains, Blackbird (the Omaha chief buried astride his horse on a hill overlooking the Missouri), the conspiratorial General James Wilkinson (the U.S. Army's top commander and Lewis's predecessor as governor of Louisiana), York, and yet another review of the facts and theories surrounding Lewis's death. A little further along are pieces on the post-expedition lives of John Colter, Baptiste Charbonneau (a.k.a. Pompey), and Sacagawea, who appears in an extended essay on "Fascinating Women of the West," by Ingrid Smyer—all part of a grand flow of mountain men, lawmen, outlaws, Indians, and other frontier archetypes.

The author, who quotes liberally from secondary sources ranging from the works of popular historians such as Stephen Ambrose to recent articles in WPO to various Web sites, makes no pretense at writing serious scholarly history, and his breezy style may put off some. But it's all done engagingly and in a way that connects the Corps of Discovery with the larger stream of westward expansion. ($16.95, paper; Cumberland House.)

These titles can be ordered through local and Web-based bookstores and in most cases from the publisher's Web site (check google.com or other search engines). ■

Digital Scanning, Inc. -
Olin Wheeler, 2 volume
"The Trail of Lewis & Clark"
1/2 page horizontal
7 1/4" x 4 5/8"
Rebecca will send.

Digital Scanning, Inc.,
8-volume
Thwaites edition of
the L&C Journals
1/2 page horizontal

PICKUP from p. 39,
August 2002 WPO

New Foundation leadership; annual awards; Bush honors explorers


Larry and Callie Epstein

JIM MERRITT

NEW PRESIDENT

Larry Epstein, of Cut Bank, Montana, was elected the Foundation's president at the annual board meeting held in July in Louisville, Kentucky. Epstein's interest in Lewis and Clark goes back 40 years, to his days as a Boy Scout in Cut Bank, when he and other members of his troop located what he believes to be the "Fight Site" where on July 27, 1806, Lewis and three others tangled with a band of Indians (either Blackfeet or Gros Ventres of the Prairie).

A Navy veteran and an alumnus of the University of Montana (B.A. and LL.B.) Epstein is a partner in the Cut Bank law firm founded by Wilbur Werner, one of the Foundation's early presidents. In the 1980s, Werner enlisted Epstein and his wife, **Callie**, as unofficial tour guides of the Fight Site. He also "volunteered" Epstein for Foundation committee assignments and eventually a position on the board of directors.

"It's so exciting and interesting to be serving during the first year of the Lewis and Clark Bicentennial," says Epstein. "What an opportunity! My goal will be to stress education about the expedition at all levels, from preschool to college. The Foundation is the 'keeper of the story,' and we will be called upon to provide the underlying, accurate educational component to this commemoration."

OTHER OFFICERS

Besides Epstein, Foundation officers for 2002-03 include president-elect **Ron Laycock**, of Benson, Minnesota; vice-president **Gordon Julich**, of Blue Springs, Missouri; secretary **Jane Schmoyer-Weber**, of Great Falls, Montana; and treasurer **Steven G. Lee**, of Clarkston, Washington. Appointed to three-year terms as directors were **Charles Cook**, of Billings, Montana; **James Gramentine**, of Meguon, Wisconsin; and **Roger Wendlick**, of Portland, Oregon.

2002 KUDOS

Save a landmark from the gravel crusher, shed new light on the life of William Clark, and return a piece of prairie to legend—the LCTHF recognized all these efforts, and more, in this year's Foundation awards, presented at the annual meeting in Louisville.

Winners of the 2002 Meritorious Achievement Awards are **Cheryl Hutchinson**, of Cascade, Montana; **James J. Holmberg**, of Louisville; and the **Lewis and Clark–Spirit Mound Trust**. In other kudos, Youth Achievement Awards went to the **Lewis & Clark Fife & Drum Corps** of St. Charles, Missouri, and to students and teachers at **Wydown Middle School**, in Clayton, Missouri. Certificates of Appreciation were awarded to Holmberg; **James Mallory**, of Lexington, Kentucky; and **Jane Henley**, of Charlottesville, Virginia.

Cheryl Hutchinson convinced the state of Montana to keep Tower Rock in public ownership. Tower Rock overlooks the Missouri River near the Gates of the Mountains, about 30 miles south of Great Falls. It was here that Meriwether Lewis noted "a most pleasing view" of immense herds of buffalo. Hutchinson drives past Tower Rock daily and two years ago saw a "For Sale" sign at its base, near where some quarrying had already occurred. She alerted the LCTHF and also called the Montana Department of Transportation, which owns the site, and pointed out its significance. Her efforts led to the decision to keep Tower Rock in public ownership. As president of the Foundation's recently formed Reaching the Rockies Chapter, Hutchinson is now working for the erection of an interpretive sign to be placed at a highway interchange near Tower Rock.

James Holmberg, curator of special collections at the Filson Historical Society, led the Foundation effort to reprint an updated version of Robert B. Betts's *In Search of York: The Slave Who Went to the Pacific with Lewis and Clark*. He also edited the acclaimed *Dear Brother: Letters from William Clark to Jonathan Clark*, jointly published this year by Yale University Press and the Filson Historical Society.

The Lewis and Clark–Spirit Mound Trust was established to restore Spirit Mound, a Lewis and Clark site on the Missouri five miles north of Vermillion, South Dakota. The Corps of Discovery stopped there on August 24, 1804. Clark recorded that the Indians regarded the mound as "a place of Deavels" that in human form stood 18 inches high, with "remarkable large heads," and whose arrows could kill "at a great distance." After the region was settled, Spirit Mound became a farm and eventually a feedlot. Members of the trust, including **Larry Monfore** and **Amond Hanson**, raised public and private funds to purchase the 320-acre site and reseed it with prairie grasses. **Kent Scribner** and **Jim Peterson** accepted the award on behalf of the trust.

The **Lewis & Clark Fife & Drum Corps** of St. Charles, Missouri, is the only organization of its type dedicated to Lewis and Clark and the time period of the expedition. It was formed in 1992, and more than 100 students ages 9-18 have performed with the group throughout the U.S. and abroad.

Students and teachers at **Wydown Middle School**, in Clayton, Missouri, have developed an interdisciplinary curriculum based on the expedition. An example of the work they have done involves calculating the shape, size, and proportions of the lead canisters holding the explorers' gunpowder. Other

students produced a Web cast of the St. Charles–based **Discovery Expedition**, the well-known group of reenactors who cruise the Missouri in replicas of the Corps of Discovery's keelboat and two pirogues. The Web cast sends lives images and sound from the boats to the classroom, enabling students to interact with the reenactors in real time. The students plan to expand the Web casts to other schools around the nation.

The Certificates of Appreciation recognized the recipients' efforts over many years to preserve and perpetuate the historical legacy of the Lewis and Clark Expedition. James Holmberg and James Mallory have been instrumental in publicizing the importance of the Falls of the Ohio area, where many of the expedition's core members were recruited. Jane Henley was a founder of the Charlottesville-based Homefront Chapter and is the Foundation's immediate past president.

WHITE HOUSE CEREMONIES

COURTESY JANE HENLEY

Pictured right, under a portrait of Thomas Jefferson, are **Hal Stearns**, **Carol Bronson**, and **Jane Henley**, who helped represent the Foundation at a White House ceremony held July 3 recognizing the importance of the Lewis and Clark Expedition and the upcoming bicentennial. **President Bush** issued a proclamation commending the Corps of Discovery for its "resourcefulness, determination, and bravery."

In his remarks, the President noted that the "expedition lasted just a couple of years, but it changed the face of our country forever. It opened up the American West for future development. It increased our knowledge of our natural resources. It helped us gain a better understanding of America's native cultures. Most importantly, the Lewis and Clark Expedition will stand forever as a monument to the American spirit, a spirit of optimism and courage and persistence in the face of adversity." Bush singled out Sacagawea, whose "courage and strength remind us that American Indians have played a central role in our history, and their unique culture must never be lost"—and stressed the importance of tribal colleges in helping to preserve "irreplaceable languages and cultural traditions." L&C editor **Gary Moulton** also spoke at the ceremony—see page 44 for his remarks. For the complete texts of all remarks, see the Web site www.white house.gov/news/releases/2002/07/20020703-9.html.

FOUNDATION RESUMES GRANTS

The LCTHF has reactivated it monetary grants program, whose purpose since its founding more than 20 years ago has been to stimulate and increase public knowledge about the Corps of Discovery. Over two decades it has supported a variety of projects with grants ranging from $200 to $1,000, including scholarly research, musical and theatrical productions, museum exhibits, community events, and youth activities. Grant applications are processed by the Monetary Grants Committee, chaired by Barb Kubik. In descending order, the committee's preferences are projects related to scholarly research and publication, research and development of interpretive signage, construction or restoration projects, constructions and installation of interpretive signage, youth activities, and creative and performing arts. The application deadline is March 15. For further details, call the Foundation's office in Great Falls (888-701-3434).

SACAGAWEA STANDS TALL

Residents of Idaho have honored Sacagawea by commissioning Boise sculptor **A. Vincen "Rusty" Talbot** to produce a 6-foot-3-inch bronze statue of the celebrated Shoshone. The recently completed work will be erected in Boise at ceremonies planned for January as the kickoff event of Idaho's bicentennial commemoration. A duplicate of the statue will be placed at the new interpretive center near Salmon, Idaho. The project was initiated in 1998 by **Lydia Justice Edwards**, then Idaho's secretary of state, and carried on by **Don Riley**, a retired businessman, and Talbot, aided by historian **Carol Lynn MacGregor**, Sacagawea author **Ken Tomasma**, and others. Riley and Talbot have raised more than $17,500 for the project, much of it from school children, and received another $16,500 from the state.

Marty Munizza and Rush sign

COURTESY FRANK MUHLY

THE PHILADELPHIA CONNECTION

Dr. Benjamin Rush, the physician who advised Meriwether Lewis on medicine and other scientific topics, was recently recognized by the city of Philadelphia, which declared last June 20 "Dr. Benjamin Rush Day" during the unveiling of a historical marker at the site of Rush's boyhood home. Local history buff **Marty Munizza** led the effort to erect the marker and did the official unveiling. The house where Rush was born is located in the city's northeastern quadrant. It was built in 1690 and stood until 1969, when it was razed to make room for an apartment complex. The site will be one of the tour stops at

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next summer's 35th annual meeting of the Foundation. Titled "The Quest for Knowledge: Lewis in Philadelphia," it will be held August 10-13. Events will include historic house tours and visits to the American Philosophical Society and the Academy of Natural Sciences to examine original journals of the expedition and plant specimens collected by Lewis. For more information, see the Web site www.lewisandclark phila.org/annual.html. Registration forms and other materials are included in the mailing of this issue of WPO.

ST. LOUIS SYMPOSIUM

The Jefferson National Expansion Memorial, in conjunction with the Missouri Historical Society and the Spanish Colonial Research Center of the National Park Service, will host a symposium next March 20-22 in St. Louis, entitled "Lewis and Clark: Observations on an Expedition." The focus will be on topics relating to the Lewis and Clark Expedition and its preparations, personnel, relations with European governments and American Indian nations, and the difficulties of the journey. The 32 speakers will include James Ronda, John Logan Allen, Daniel Botkin, James Holmberg, Roger Kennedy, Landon Jones, William Foley, Jon Kukla, Carolyn Gilman, David Peck, Joseph Mussulman, Jay Buckley, Carol Lynn MacGregor, James Thom, and Amy Mossett.

For registration forms and additional information, see the insert in this edition of WPO or the Web site www.nps.gov/jeff/LewisClark2/TheBicentennial/Symposium2003/Symposium2003.htm. Questions may also be directed to Bob Moore, Historian, Jefferson National Expansion Memorial, 11 North 4th Street, St. Louis, MO 63102. (314-655-1629; Fax: 314-655-1642; Bob_Moore @nps.gov.)

MISSOULA CONFERENCE

"A Confluence of Cultures: Native Americans and the Expedition of Lewis and Clark" is the title of a symposium to be held next May 28-31 in Missoula, Montana. Sponsored by the University of Montana–Missoula and the Montana Lewis and Clark Bicentennial Commission, the conference will examine and compare the cultural practices of the new United States and those of the Indian nations encountered by the Corps of Discovery. The conference planners encourage the involvement of faculty and students from tribal colleges and universities. For more information, see the Web site www.umt.edu/cultures; e-mail cultures@mso.umt.edu; call 406-243-6093; or write Symposium Coordinator, Confluence of Cultures, James Todd Building, University of Montana, Missoula, MT 59812.

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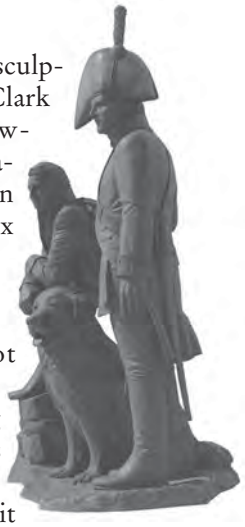

A 14-foot bronze sculpture of Lewis and Clark and Lewis's Newfoundland dog, Seaman, was unveiled on August 15 in Sioux City, Iowa, in ceremonies that also included the raising of a 30-by-50-foot replica of the 15-star, 15-stripe flag carried by the Corps of Discovery.

Titled "The Spirit of Discovery," the bronze was created by **Pat Kennedy**, a sculptor from Loveland, Colorado. The bronze and the flag are on the same site on the Missouri River as the city's new L&C interpretive center. Among other exhibits, this $3.5 million, 8,750-square-foot facility, which opened September 21, features panoramic murals and animatronic mannequins of Lewis and Clark. The costs of the bronze, flag, and center are underwritten by Missouri River Historical Development, Inc., a nonprofit organization whose income derives from gaming aboard the riverboat *Belle of Sioux City*.

CHARLOTTESVILLE KICKOFF

"Jefferson's West, a Lewis and Clark Exposition," will be held in Char-

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How will the future find us?

Excitement is high now as we approach the Bicentennial that will dramatically share the Story and the Trail with thousands who at this time know them only vaguely.

The Lewis and Clark Trail Heritage Foundation has been key to readiness for the Bicentennial, and the Foundation needs to remain on duty and on guard long after the last Signature Event has followed Corps I and II into history.

How well will we handle that task? Recent times have been hard, with income barely adequate to cover the basic programs. Our Library, with its rich resources for research and study, has been particularly handicapped, understaffed, and often closed.

But as we look ahead, we can see a path, a way that will take us over our Mountains! You read in the May 2002, issue of WPO, page 44, about the late, longtime LCTHF member, Bob Shattuck, who made several generous estate gifts to the Foundation: valuable, interesting books, and a monetary portion of his assets. What incredible provisions for the Foundation's journey forward!

To do this — and much like the Captains before him — Mr. Shattuck had to look ahead, think ahead, and act. He wanted to add strength to an organization whose mission resonated with his own goals and interests, and he knew that financial stability is vital to that mission. He saw that he could help, and he did.

Thank you, Bob Shattuck! There are still mountains ahead, butfriends like you can help the Foundation over them and into a strongfuture of service to our nation's heritage!

L&C Roundup (cont.)

lottesville, Virginia, January 14-19. The highlight of the six-day event—the formal kickoff of the L&C Bicentennial—will take place Saturday, January 18, at Monticello, Jefferson's mountaintop home. For more information, see the ad on page 5 or the Web site www.monticello.org/jefferson/lewisandclark.

Future bicentennial signature events will be held at Louisville, Kentucky, October 14-26, 2003; St. Louis, March 12-14, 2004; Hartford, Illinois, May 13-16, 2004; St. Charles, Missouri, May 14-23, 2004; Atchison, Kansas, July 3-4, 2004; Fort Calhoun, Nebraska, July 31-August 3, 2004; Chamberlain, South Dakota, August 27-28, 2004; Bismarck, North Dakota, October 23-31, 2004; Great Falls, Montana, June 1-July 4, 2005; Astoria, Oregon, November 24-27, 2005; Billings, Montana, July 22-25, 2006; Bismarck, North Dakota, August 17-20, 2006; Lewiston, Idaho, June 14-17, 2006; and St. Louis, September 23, 2006. For more details, see the Web site www.lewisandclark200.org/calendar/signature_events/sig_events2.html.

L&C IN OTHER PUBLICATIONS

"Iron Will," an article in the August *Smithsonian* by Landon Y. Jones, tells the story of William Clark in his post-expedition role as the chief arbiter of Indian-white relations on the frontier. "The record is clear," writes Jones, "that Clark's efforts to reconcile the clashing interests of Indians, westward moving settlers and the federal government consumed—and profoundly disappointed—him [and] led to an overwhelming tragedy: the forced relocation of tens of thousands of Indians from their home in the East and South, across the Mississippi to lands in Oklahoma and Kansas."

The July issue of *William and Mary Quarterly* includes a lengthy analytical essay by Andrew R.L. Cayton about three important Lewis and Clark books: Dayton Duncan's *Out West: A Journey Through Lewis and Clark's America*, the 13-volume *Journals of the Lewis & Clark Expedition* (edited by Gary E. Moulton), and James P.

L&C scholar Gary E. Moulton's remarks at the White House, July 3, 2002

It is a great honor to be here today for the unveiling of this portrait and the display of items from the expedition, an occasion which gives us an opportunity to celebrate and contemplate the life of Meriwether Lewis, especially his expedition across the continent with his good friend, William Clark, and the band of men they came to call the Corps of Discovery. Our earliest school-day memories probably include stories of Lewis and Clark, and the names have become so intertwined that we can hardly say one without the other, LewisandClark. But today our attention is given to Lewis.

July the third, 1806, one hundred and ninety-six years ago today, was one of those pivotal days for Lewis and Clark. Two men—inseparable in history—were about to separate. It was the first time during the expedition that they were to be apart for such a long time and over so great a distance. Lewis admitted, "I could not avoid feeling much concern on this occasion[,] although I hoped this seperation was only momentary." It was, in fact, nearly six weeks before these friends were together once again.

The bitterroot: *Lewisia rediviva*

Just three days earlier, the party had established camp at a spot that has come to be called Travelers' Rest, after the captains' name for the adjacent creek. It is modern Lolo Creek, near today's Missoula, Montana. The party had also camped here on the outbound journey—resting up after a difficult journey through the Rocky Mountains and reviving themselves before taking on the laborious Lolo Trail. Lewis called that trail the "wretched portion of our journey … where hungar and cold in their most rigorous forms assail the waried traveller." Now on the return, the camp was also a respite for weary travelers who had trudged through deep mountain snows to get to this point.

But rest was never a priority for Lewis, especially at a place that afforded so many opportunities for discoveries of previously unknown plants. The day after arriving at Travelers Rest Lewis went on a botanical excursion and gathered a number of new plants, among them a small plant that he may have noticed earlier. The previous year he had tasted the plant's root, a staple of the Rocky Mountains Indian diet, and called it "naucious to my pallate." Now he saw it in bloom and collected a specimen from the dry, sandy soil. We don't know what drew the captain's attention to the plant, but it was blooming late that year and its delicate pink flowers may have caught his eye. The showy little plant was plucked from the ground, pressed between collecting sheets, and preserved for scientists in the East. Lewis knew that he was seeing a plant new to science, so he was fulfilling his mission to describe and collect the flora of the West. Then he carried it and the rest of his collection some 3,000 miles by boat, horseback, and carriage to Philadelphia and to his scientific advisers.

In Philadelphia Lewis hired Frederick Pursh, a German botanist then in the city, to examine and describe his collection in preparation for his history of the expedition. Lewis died before the book was completed and Pursh turned to writing his own book about the flora of North America, in which Lewis's botanical collection formed an essential part. Despite Lewis's significant contributions Pursh gave him little credit, but he did name the pink plant of the Rockies in Lewis's honor and designated it, *Lewisia rediviva*. It is better known by its common name, bitterroot, a†term that is also applied to the Bitterroot River and to the Bitterroot Mountains, terrain well-known to Lewis and Clark. And the plant itself is the state flower of Montana.

Pursh chose the second part of the name scientific name, *rediviva* (or reviving one), because of a singular phenomenon he noticed about the plant. After being packed away in Lewis's collection for more than a year, the root was taken out, planted, and it sprang to life in spite of the damp climate and inhospitable soil of Philadelphia. After Pursh's work with the collection, the bitterroot, along with the remainder of Lewis's herbarium, weas deposited in Philadelphia, where the bitterroot specimen rests today. It's but a shadow of the plant Lewis collected. The root is gone, of course, used up in reviving itself one last time, and only six tiny flowers and a few stems remain.

Yet, it speaks to our presence in this room today. The reviving powers of a small plant of the Bitterroots reflect the restoration of the Lewis and Clark story from one generation to the next. Stories of endurance, courage, and accomplishment such as those of Lewis and Clark never die. They revive our spirits by reminding us of human achievement in the face of seemingly insurmountable odds and for the greater good of humankind.

Once again we have the chance to tell the Lewis and Clark story to another generation. And we now have an incredible array of resources in place to enable us to get it out. With Stephen Ambrose's estimable biography of Lewis, Ken Burns's superb film of the expedition, and National Geographic's grand IMAX, plus scores of books, essays, pamphlets, and periodicals, and the modern means of Web sites, CDs, and curriculum guides, we can teach, learn, and revel in the story as never before. Monticello will inaugurate the event in January, the Missouri Historical Society will mount a national traveling exhibit, and organizations like the National Park Service, the National Council of the Lewis and Clark Bicentennial, and the Lewis and Clark Trail Heritage Foundation will guide us as we're swept along across the continent with Lewis and Clark and their twenty-first century followers.

Join us as we revive once more this wonderful story of an expedition of discovery.

Gary E. Moulton is editor of the 13-volume Journals of the Lewis & Clark Expedition *(University of Nebraska Press).*

DRAWING FROM *PETERSON'S FIELD GUIDE TO ROCKY MOUNTAIN WILDFLOWERS*

Ronda's *Finding the West: Explorations with Lewis and Clark*. The title of the essay is "Looking for America with Lewis and Clark." Observes Cayton, "The expedition has all the elements of an adolescent male adventure. No small part of the enduring appeal of the Lewis and Clark expedition, in fact, is that it seems relatively benign. Their motives were good, their behavior generally decent (notwithstanding Lewis's outbursts of temper and hostility to Native Americans), their expedition difficult but not impossible, dangerous but not deadly." Available online through www.historycooperative.org/wmindex/html.

The April issue of *National Geographic* includes an article by Cathy Riggs Salter titled "Lewis and Clark's Lost Missouri." The magazine's Web site has the first few paragraphs of the article, some of the photos, and a list of the magazine's previous articles relating to Lewis and Clark (dating from 1895). See http://magma.nationalgeographic.com/ngm/0204/feature5/index.html.

National Geographic Traveler's March issue features "Lewis & Clark: Trouble on the Trail?" This article, by Geoffrey O'Gara, focuses on trail stewardship as land owners gird for the L&C Bicentennial.

The online magazine *Slate* (www.slate.com) has an article by David Plotz posted August 16 and titled "Lewis and Clark: Stop celebrating. They don't matter," which argues that the expedition "produced nothing useful" and essentially had no bearing on the future history of westward expansion. "Like the moon landing," the author asserts, "the Lewis and Clark expedition was inspiring, poetic, metaphorical, and ultimately insignificant."

EDUCATION PROJECT

The National Lewis and Clark Education Project is seeking educators and institutions interested in participating in its efforts. Based at the University of Montana, the project supports L&C-related education throughout the country through an interactive Web site (www.lewisandclarkeducationcenter.com). Its facilities include a mobile computing lab and GPS technology to explore landscape changes along the L&C Trail. For more information, contact Jeff Crews (406-243-2644; jcrews@eoscenter.com).

CHAPTER NEWS

The Foundation welcomes seven new regional chapters, bringing the total number of chapters to 38. They are the Missouri-Yellowstone Confluence Chapter, encompassing the northwest North Dakota–northeast Montana area (Robert Thomson, president); the Central South Dakota: Encounter on the Prairie Chapter (Bill Stevens, president); the Florida Chapter (Art Litka, president); the Reaching the Rockies

Chapter, in Cascade, Montana (Cheryl Hutchinson, president); the Celilo/The Dalles Chapter, in Oregon (Gary Honald, president); and the Meriwether Lewis Chapter, in Hohenwald, Tennessee (Patty Choate, president).

CAMPSITE FOUND?

What may be a Corps of Discovery campsite has been located at Lolo, Montana. Archaeologists excavating a possible latrine used by the Lewis and Clark Expedition at Travelers' Rest found a 50-centimeter-deep layer of soil with significant concentrations of mercury, a metal absent from layers above and below. The archaeologists theorize that the mercury was in the excrement of those explorers treated with "Rush's thunderbolts," the powerful purgative and all-purpose medicine whose primary active ingredient was mercury.

FOR THE RECORD

Several items in the May 2002 WPO: The caption on page 13 accompanying the drawing of the Teton Sioux's run-in with the Corps of Discovery at Bad River should have stated that the warrior locked his arms around the mast of one of the pirogues, not the keelboat. The caption on page 16 should have said that the Teton Sioux ceremony depicted by artist George Catlin occurred 28 years after Lewis and Clark's encounter with that tribe, not 29 years. The item about the Crimson Bluffs on page 40 should have said that the corps passed the bluffs in July 1805, not May 1805 (the exact date was July 24).

In the May 2001 issue, page 8, we misspelled the name of Tetoharsky, one of the explorers' Nez Perce guides who accompanied them during part of their descent of the Columbia River. On page 11, we said that Clark in his first journal reference to Beacon Rock on the Columbia called it "Beaten" Rock; we should have noted that on the return trip he spelled it correctly.

Our thanks go to Carl Camp, of Omaha, Nebraska, and Barb Kubik, of Vancouver, Washington, for pointing out some of these items. ■

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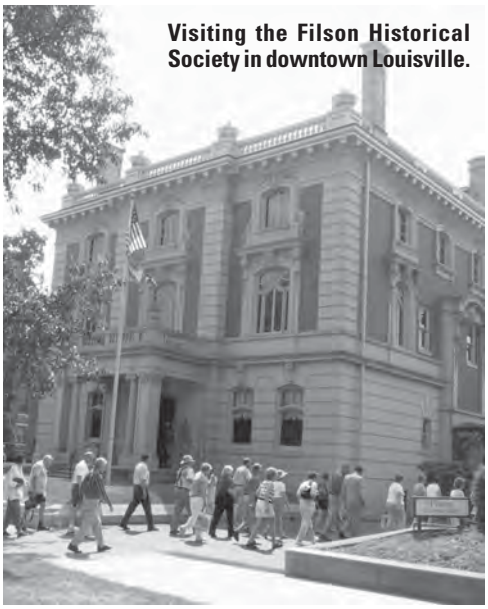
Louisville, July 2002: Foundation convenes at the Falls of the Ohio

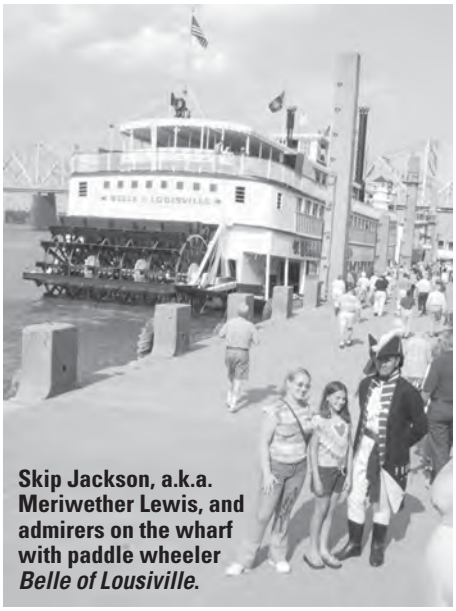
Some 460 Lewis and Clark buffs gathered in Louisville July 28-31 for the 34th annual meeting of the LCTHF. It was here at the Falls of the Ohio River that Meriwether Lewis linked up with William Clark to form the most famous partnership in the history of exploration. It was here too that the famed Nine Young Men from Kentucky—the "core" of the Corps of Discovery—were recruited. Louisville was also the home of York, Clark's African-American manservant and slave, who would play a key role in the expedition. The four-day celebration included lectures and visits to many L&C-associated sites. ■

Latter-day explorers view L&C-era cabin at Clark's Point, Indiana, overlooking the Ohio.

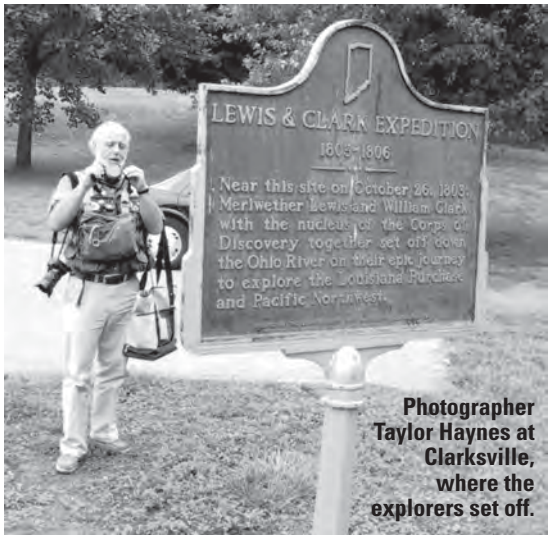
Interpreter performs on Indian flute at Jefferson County Memorial Forest.



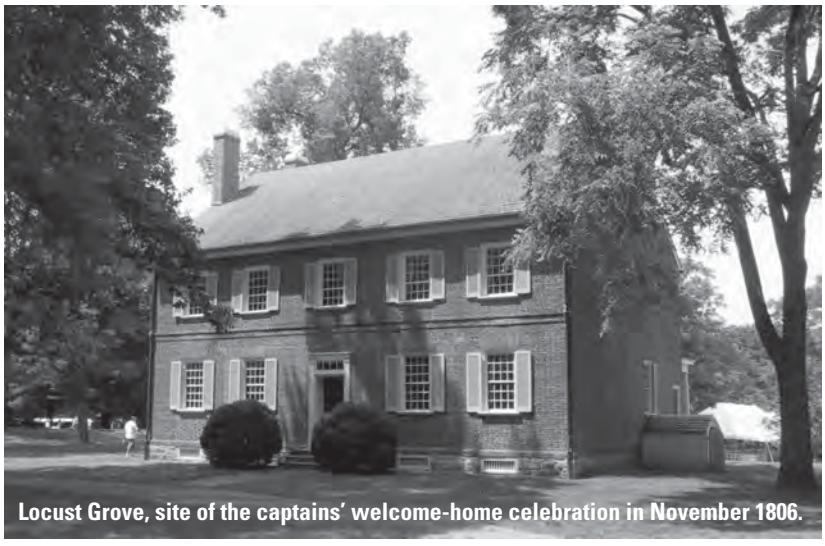
Visiting the Filson Historical Society in downtown Louisville.



Skip Jackson, a.k.a. Meriwether Lewis, and admirers on the wharf with paddle wheeler *Belle of Louisville*.



Photographer Taylor Haynes at Clarksville, where the explorers set off.



Locust Grove, site of the captains' welcome-home celebration in November 1806.

PHOTOS BY JIM MERRITT

EXHIBIT CARRICK-3

The Firearms of the Lewis and Clark Expedition

S. K. Wier

Many skills and many tools contributed to the success of the Lewis and Clark Expedition. Firearms were absolutely essential, not for warfare and conquest, but for daily hunting for food, to provide a strong defense if needed, and for natural history collections.

If we want to have a full understanding of the experiences and achievements of the men of the "voyage of discovery," an appreciation of their guns and the guns' limitations is necessary. Firearms technology improved tremendously in the century after the expedition; their guns were not like modern guns.

The journals and records prepared by the expedition members show that they carried rifles from the arsenal at Harpers Ferry, Virginia, and army service muskets brought by soldiers posted from other units. Personal firearms were brought by Captains Clark and Lewis, and some of the hunters enlisted for the journey may have used their own rifles. The French-speaking boatmen probably carried "trade guns." Lewis brought an air-powered rifle, a case of matched pistols, and a fowling piece, and Clark brought an "elegant fusil." A swivel gun, a small cannon, was mounted on the keelboat, and the two pirogues each had a blunderbuss. All the firearms of the Lewis and Clark expedition were single-shot, muzzle loading, black powder guns with flintlock ignition, the notable exception being Lewis's air gun, which on several occasions astonished native Indians, presumably because of its rapid, smokeless, and somewhat quiet firing

The expedition journalists nowhere describe guns in detail. Guns were common properties of life everywhere on the frontier, not worthy of note compared to the daily discoveries of the expedition. The only surviving guns that might possibly be relics of the expedition are a rifle that once belonged to Clark and an air rifle, and it is only a faint possibility. To achieve a complete picture of the guns of the expedition, a kind of detective process is required, piecing together brief journal entries, other expedition records, and documents of the time, as well as recent firearms scholarship and examination of surviving firearms. Sometimes the clues are only a few words, and the meaning is ambiguous. Some conclusions are tentative, linking brief statements written many miles and many years apart. Questions remain, but much has been learned, and firearms research allows more positive statements than were possible even a few years ago.

Expedition Rifles

On March 16, 1803, a year and two months before the expedition headed up the Missouri River, Captain Meriwether Lewis arrived at the federal Armory at Harpers Ferry, then in Virginia, to arrange for military supplies needed by the expedition. President Thomas Jefferson and Lewis originally planned an expedition of fifteen men,[1] and Lewis's list of requirements included "15 Rifles, 15 Powder Horns & pouches complete, 15 Pairs of Bullet Moulds, 15. do. of Wipers or Gun worms, 15 Ball screws, 24 Pipe Tomahawks, 24 large knives, Extra parts of Locks & tools for repairing arms, 15 Gun Slings, 500 best Flints ... 200 lbs Best rifle powder, 400 lbs Lead."[2]

1 Donald Jackson , ed., *Letters of the Lewis and Clark Expedition and Related Documents*, 1783-1854, 2 volumes (Urbana: University of Illinois Press, 1968), Vol. 1, pp. 69-99; 102; 103.

2 Ibid., p. 70.

Before 1999, when Frank Tait published his study of the 1792 contract rifles, it was widely believed that the rifle supplied for the Lewis and Clark Expedition was the "U.S. Model 1803" rifle made at Harpers Ferry.[3] However, Tait's careful examination of letters and records of the times makes clear that this rifle was not actually manufactured until 1804 and so could not have been obtained by Lewis during his visit early in 1803.[4] What kind of rifles did Lewis select at Harpers Ferry, and what was done to prepare them? An inventory at Harpers Ferry Armory taken April 6, 1801, showed 382 rifles in storage there, most of which were the "1792-1794 Contract" rifle.

In 1791, following Major General Arthur St. Clair's disastrous defeat near the Wabash River, Secretary of War Henry Knox arranged for purchase by contract of nearly 1500 rifles from gunsmiths in Pennsylvania; 2000 more were ordered in 1794. For this contract Knox approved a pattern flintlock rifle with a 42-inch octagonal barrel, 40 balls to the pound or caliber 0.49,[5] a full-length plain maple stock, and a plain patch box with a release button on top of the butt plate. In early 1801 some of these "1792 contract rifles" were shipped to the Harpers Ferry Armory, which had just opened.[6] No more than six or seven specimens of the 1792 contract rifle are known to survive, but they show the kind of gun that Lewis had to choose from at Harper's Ferry.[7]

Lewis directed that fifteen of these existing rifles be prepared to suit the needs of the expedition. The modifications included swivels for slings and new flintlocks. Gunsmiths at Harpers Ferry fitted the new locks, apparently the same flintlock design used later on the Model 1803 rifle. Surviving "1792 contract" rifles indicate the original patch boxes were like those on the Model 1803 rifle. The rifling in the barrels may have been "freshened" or recut, and it appears that the bore was enlarged, as described below. It also appears that the barrels were shortened from the original length of 42 inches, but the reduced length is not known.

On April 18 Lewis departed Harpers Ferry for Lancaster, Pennsylvania, and Philadelphia, for special training and to purchase supplies. Two days later he wrote a long letter to Jefferson reporting his progress and plans, mentioning firearms only in one sentence: "My Rifles, Tomahawks, & knives are preparing at Harpers Ferry, and are already in a state of forwardness that leaves me little doubt of their being in readiness in due time."[8]

On July 8, 1803, Lewis, back at Harpers Ferry, again wrote to Jefferson. He had just completed arranging wagon transport of all his supplies to Pittsburgh. "Yesterday, I shot my guns and examined the several articles which had been manufactured for me at this place; they appear to be

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3 Carl P. Russell, *Firearms, Traps, & Tools of the Mountain Men,* (Albuquerque: University of New Mexico Press, 1967), p. 37.

4 Frank A. Tait, "The U.S. Contract Rifle Pattern of 1792," *Man at Arms* 21, no. 3, (May/June 1999) pp. 33-45. Frank A Tait, "Response to the letter of Michael H. Maggelet," *Man at Arms* 21, no. 6, (November/December 1999) pp. 7-8.

5 Gun caliber of size of the barrel's bore is now indicated by diameter in inches. A 0.49 caliber barrel has a bore 0.49 inches across. At the time of the expedition barrel size was given by how many round lead balls could be made to fit a gun from one pound of lead. A 0.49 caliber barrel takes 40 round lead balls to the pound. Modern shotguns preserve the old system: a 12 gage shotgun could fire leads balls of 12 to the pound.

6 Tait 1999a, pp. 34, 36, 37.

7 Ibid., pp. 35-36; George D. Moller, *American Military Shoulder Arms*, (Niwot: University Press of Colorado, 1993), Vol. 2. pp. 19-30.

8 Jackson, Vol. 1, p. 40.

well executed."[9] At Pittsburgh the rifles and other equipment were loaded on the keelboat for the voyage down the Ohio River.

The Mystery of the "Short Rifles," Rifle Length, and Caliber

There are several references to "short rifles" in the expedition journals: by Lewis on April 12, 1806 ("we caused all the men who had short rifles to carry them, in order to be prepared for the natives should they make any attempts to robe or injure them."); by Ordway, June 18, 1806; and by Lewis, August 11, 1806, after he was accidentally shot by Cruzatte: "... the ball had lodged in my breeches which I knew to be the ball of the short rifles such as that he had."[10] Lewis must have recognized the round lead bullet simply from its size, even under trying circumstances..

What were these "short rifles?" "Short rifle" appears to be a term for the rifles prepared at Harpers Ferry, with barrel lengths reduced from the original length of the 1792 contract rifle, 42 inches. American rifles of the time typically had barrels 40 to 48 inches long, or more.[11] A rifle with a barrel much shorter than 40 inches would have been a short rifle. Hunters know that there is a difference handling guns with short barrels, and a short gun is handy when traveling in small boats or in rough terrain, as on the expedition. Lewis may have desired a handier rifle than one with a 42 inch barrel, and had his selected 1792 contract rifles' barrels shortened at Harpers Ferry.

During the expedition some rifle barrels were shortened again. On July 1, 1806, on the return journey, the party's blacksmith John Shields shortened Windsor's rifle that had "busted ... near the muzzle."[12] Clark reported "two of the rifles have unfortunately bursted near the muscle [muzzle], Shields Cut them off and they Shute tolerable well one which is very Short we exchanged with the Indian whoe we had given a longer gun to induc them to pilot us across the Mountains."[13] The Indian was the Nez Perce chief Speaking Eagle, and he asked to exchange his gun for the short rifle.[14]

So there were two meanings for "short rifles:" the fifteen 1792 contract rifles, apparently shortened at Harpers Ferry, and two or three of those same rifles which were further shortened to remove a split barrel muzzle. All the journalists' references with the words "short rifles" appear to refer to the original unaltered guns. When Lewis directed that short rifles be used on April 12, 1806, in case of "attempts to robe or injure them," before shortening barrels for repairs, he surely was indicating the best guns of the party, the rifles from Harpers Ferry. No commander would choose damaged guns for the weapon of choice.

Lewis's quick recognition of the ball fired by Cruzatte appears to show that the "short rifles," the Harpers Ferry rifles, fired a bullet that was clearly different in size from other guns on the expedition. If others on the expedition had personal rifles (typically with calibers close to 0.49, the same caliber as the unmodified 1792 contract rifles), and personal smoothbores (muskets with caliber of 0.69; fusils with caliber of 0.625 or more), then the "short rifles" must have had a noticeably different caliber, larger than 0.49 and less than 0.625. Lewis's remark is the only

9 Jackson, Vol. 1, p. 107.

10 Moulton, Vol. 7, p. 111; Vol. 9, p. 324; Vol. 8, p. 155.

11 Short barrels were known: German Jaeger rifles had barrels as short as 28 inches and were widely used in the American Revolution by the Hessian Jaeger Corps and other German units. Many Americans in 1803 were familiar with the short Jaeger rifle. Moller, Vol. 1, p. 449.

12 Moulton, Vol. 8, pp. 27; 75.

13 Ibid., p. 80.

14 Zoa L. Swayne, *Do Them No Harm! Lewis and Clark among the Nez Perce,* (Caldwell Id.: Caxton Press, 1990), p. 303.

evidence I know that the expedition rifles had a caliber larger than 0.49. As a matter of personal experience it is hard to distinguish a .50 caliber ball from a 0.49 ball, but a 0.54 ball, for example, is plainly larger than a .49 ball.

It appears that Lewis selected the fifteen expedition rifles as the best of some three hundred 1792 contract rifles in storage at Harpers Ferry in March 1803. New flintlocks were fitted, the same locks used on the later Model 1803 rifle, and swivels and slings were added. I expect that the barrels were shortened to a length less than 42 inches long, and that they had full stocks. There is some reason to think the barrels were re-bored, increasing the caliber from 0.49 to a noticeably larger bore.

Other Rifles

Civilian hunters enlisted for the expedition, including the "nine young men from Kentucky," may have used their own firearms, and those guns mostly would have been American long rifles or "Pennsylvania rifles," the common rifle of hunters on the frontier. These famous American guns were made by individual gunsmiths in eastern Pennsylvania and adjacent states. They were typically 57 to 60 inches long; sometimes more than 65 inches. Barrels were generally 40 inches long, or more, and the caliber usually was about 0.45 to 0.50. Ornamentation was common, with ornate patch boxes, trigger guards, and side plates, and carving on the wooden stock. Many fine examples of this handsome and famous American rifle survive, and are the subject of intense study.[15] A song "The Hunters of Kentucky," written by S. Woodworth and W. Blondell in 1815 after the Battle of New Orleans, became very popular and may have originated the term "Kentucky rifle," but there is no record of the name "Kentucky rifle" being in use at the time of the expedition.[16]

Muskets

A musket is a smoothbore: the interior of the barrel is smooth, unlike a rifle barrel which has spiral grooves to impart spin to the ball. Muskets are easier and faster to load than rifles, an advantage in battle, but are less accurate. Muskets can fire single round bullets, or small shot for hunting, like a modern shotgun. Flintlock muskets were the regular firearm for soldiers in the American army of 1803. We know Lewis intended from the beginning that muskets would be used on the journey. The "Invoice of Articles received from the Arsenal for the use of Capt. Lewis May 18th. 1803" includes 125 musket flints and "15 Cartouch Box Belts,"[17] standard infantry equipment for holding musket cartridges – paper tubes containing a bullet and enough powder for one shot.

Lewis did not have to obtain muskets from the arsenal since enlisted men and sergeants coming from other army units brought their service muskets to the expedition. This was the "Charleville pattern musket," as it was known then, now called the Model 1795 musket. It was manufactured in Springfield, Massachusetts at the Springfield Armory from 1795 to 1814, and at Harpers Ferry beginning in 1801. The total production was 80,000 to 85,000 guns. This gun was the first official

15 Henry J. Kauffman, *The Pennsylvania-Kentucky Rifle*, (New York: Bonanza Books, 1960). Joe Kindig, Jr., *Thoughts on the Kentucky Rifle in Its Golden Age,* (York, PA: George Shumway, 1960). Merrill Lindsay, *The Kentucky Rifle,* (New York: Arma Press, 1972).

16 Lindsay, p. 1.

17 Jackson, Vol. 1, p. 98.

model musket made for the U.S. government. It is a very close copy of the French Model 1763 Charleville musket. The overall length is 60 inches and the weight is near 10 pounds. The barrel is 44 ¾ inches in length, 0.69 caliber, tapered, and round.[18] In his early planning, Meriwether Lewis provided accoutrement's for fifteen rifles and fifteen muskets for his intended party of fifteen men. On the actual expedition there must have been about as many Charleville pattern muskets as Harpers Ferry rifles. Although we tend to envision the men of the Lewis and Clark Expedition hunting with flintlock rifles, muskets were often used.

Some of the French *engages,* the boat men, surely brought their own guns, rifles or trade muskets. The trade musket, often called the trade gun or the North West gun, was a basic, plain musket about 0.60 inches caliber and 50 inches overall. Various forms of the North West gun were traded to native Indians in large numbers on the frontier for nearly 200 years. Distinctive trade gun features include a brass butt plate, a side plate in the form of a curling serpent, and an oversized trigger guard that allowed the trigger to be pulled when wearing mittens.[19] The journalists of the expedition encountered trade muskets among the native Indians and called them "fusees."

Since rate of fire of muzzle-loading guns is a matter of some importance, for example when dealing with grizzly bears, note that properly loading a patched ball in either a flintlock rifle or a musket requires a minute or slightly less. Loading times of half a minute are difficult to achieve. A bear can run more than 600 feet in half a minute. That is one reason the members of the expedition preferred to go out in groups when hunting grizzly bears, that, plus the fact that no gun on the expedition could be certain of killing large game in one shot.

Clark's "Small Rifle"

Eighteenth and early-nineteenth century military officers on campaign often took considerable personal property with them. Clark several times refers to his own "small rifle .. the Size of the ball which was 100 to the pound."[20] He even noted early in the journey "Little rifle for all my hunting." That was before he fired four times at an elk without bringing it down. Small indeed: 100 lead bullets to the pound are 0.36 inch diameter balls, not much larger than a pea. These bullets are one eighth the weight of a bullet for a Charleville pattern musket. Such a small-caliber flintlock rifle is light and easy to carry which may explain Clark's preference for it over the heavy muskets and expedition rifles weighing nearly ten pounds. A 0.36 caliber rifle that belonged to Clark is now owned by the Missouri Historical Society. It has a silver patch box and is highly ornamented, typical of Pennsylvania-style rifles made after 1790, with a mixture of features from early (Revolutionary War symbols in the ornamentation) and late (percussion lock, after 1810) periods of rifle building. The barrel is 37 ¾ inches long and the gun is 53 ¾ inches overall.[21] It was made by John Small of Vincennes, Indiana. Both the caliber and the maker's name raise the possibility that this surviving gun was the "small" rifle Clark carried on the expedition. Stylistically this gun could have been made before 1803 (with an original flintlock replaced later with a percussion lock), or it could have been made after 1806. Clark clearly liked "Small rifles." He may have purchased this one after the expedition. This rifle shows comparatively little wear. There is a chance that this rifle is Clark's "little rifle" of the expedition, but at the moment there is no definitive reason to be sure.

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18 Robert M. Reilly, *United States Martial Flintlocks,* (Lincoln, RI: Andrew Mowbray, 1987), pp. 51-54.

19 Charles E. Hanson, *The Northwest Gun.* (Lincoln: Nebraska State Historical Society, 1955).

20 Moulton, Vol. 6, pp. 121. Michael F. Carrick, "William Clark's `Small' Rifle, " Muzzle Blasts, 64, no. 11, (November 2003), p. 37.

21 Carolyn Gilman, *Lewis and Clark Across the Divide*, (Washington: Smithsonian Books, 2003), p. 356.

Clark's "Elegant Fusil" and Lewis's Fowling Piece

Clark also took an "elegant fusil" on the journey, a gentleman's sporting gun. "Fusil" is simply a French word for a smoothbore, and the expedition journalists call the natives' plain trade muskets "fusees." Fusils of an altogether different sort were comparatively small, high-quality, light-weight, ornamented smoothbores used by gentlemen for hunting birds and small game. Usually these gentleman's guns have a brightly polished barrel, ornamentation in the form of engraved brass or silver fittings and inlays, and finer workmanship than military and trade muskets. They deserve the adjective elegant.

Generally the fine fusils of the time are English guns with round tapering barrels, or octagonal barrels at the breech, becoming round about 10 inches ahead of the breech, with a caliber of 20 gage (20 balls to the pound, or 0.625 inches) to 0.69. Overall lengths fall in the range 48 inches to 58 inches, 52 to 55 inches being most common; the weight is 6 to 8 pounds. Fittings often include a butt plate and side plate engraved with hunting or martial scenes or symbols, a trigger guard with acorn finial, an engraved thumb piece or escutcheon plate, and sometimes checkering on the wrists.

On June 29, 1805, Clark, Charbonneau, Sacagawea, and her baby were in a ravine during a downpour, just upstream of the highest waterfall on the Missouri River, and were nearly swept away in a torrent that grew to 15 feet deep. In his journal that evening Clark described the flash flood and his loss of an "eligant fusee" [elegant fusil] and other equipment. Lewis, however, wrote that *Charbonneau* "lost his gun" and "my wiping rod" in the flood, and makes no mention of any fusil. However, Lewis did not learn of the flash flood adventure until two days later, when Clark and his party reached the upper portage camp. Whitehouse, who was also at the upper camp with Lewis, wrote in his journal "Capt. Clark lost the large Compass a fusiee pouch & horn." Sergeant Ordway was with Clark the evening after the flood. His journal entry is largely a copy of parts of Clark's journal, stating Clark lost "an elegant fusee."[22] Whose gun was lost remains a mystery, although Clark was present, and saw what happened. On the other hand Charbonneau was prone to poor judgment and mistakes. Clark also wrote, when the flood began, "I took my gun & Shot pouch in my left hand" and does not say he later dropped the gun. Another bit of evidence about a Clark fusil is a later entry in his journal, on August 30, 1805: "finding that we Could purchase no more horse than we had for our goods &c. ... I gave my Fusee to one of the men & sold his musket for a horse . . . ."[23] This might have been a simple trade gun "fusee," but a trade gun is an unlikely exchange for the better quality Charleville pattern musket -- if that is what the man had. So perhaps Charbonneau did lose a gun, or fusil, in the flash flood and Clark gave a personal fusil to one of the men on August 30. Odd to think of one of the men of the expedition using a gentleman's elegant sporting gun. In any case, Clark appears to have had at least one "eligant fusee" on the expedition. This is another case where scanty evidence leaves us in doubt.

After the return of the expedition Lewis submitted several requests for reimbursement of personal expenses. One listed items of personal property he traded for supplies: "One Uniform Laced Coat, one silver Epaulet, ... one pistol, one fowling piece, all private property, given in exchange for canoe, horses, &c."[24] A fowling piece is a civilian smoothbore long gun, not so elegant as a gentleman's fusil, and with an unusually long barrel -- some fowlers were over six feet long -- used primarily with small shot for hunting birds. "Fowlers" in the parlance of the time mean

22 Moulton, Vol. 4, p. 341; Vol. 9, p 177; Vol. 11, p. 215.
23 Moulton, Vol. 5, p. 178.
24 Jackson, Vol. 2, p. 428.

hunters using small shot in a fowling piece or in any suitable smoothbore gun, going out for birds, small game, or even deer.

Lewis's Air Gun

The most remarkable gun of the expedition was Lewis's personal air rifle. Many expedition journal entries mention the "air gun,"[25] usually for a demonstration in council with the Indians, a display that usually "astonished the nativs."[26] The air gun is a legendary property of the adventure, in no way lessened by being something of a mystery. The air gun proved useful, impressing Indians with apparently magical powers -- it was almost silent, it made no smoke, and it appears to have been a repeater.

Lewis wrote that he purchased the air gun in 1804, but did not say where. There is no known expedition record of what it looked like or how it worked. Our knowledge of the air gun is based on brief expedition journal entries, and on three nineteenth-century documents: a personal journal, a memoir written some years after the event but possibly based on a journal, and a auctioneer's pamphlet, all of which may have errors. Two candidate air guns have been discussed at considerable length. One air gun is a single-shot gun made in America, the other is a repeater designed in Austria and made in Europe.

Until recently the conclusion of researchers was that the air gun was made by Isaiah Lukens of Philadelphia or possibly by his father Seneca Lukens.[27] Key support for this view is an 1846 auctioneer's pamphlet of items in the sale of Isaiah Lukens' estate, written forty years after the expedition's return. The list includes several air guns and air canes, and "1 large Air Gun made for, and used by Messrs Lewis & Clark in their exploring expeditions. *A great curiosity*." Note that it does not say the gun was made by Lukens, although another item in the list is described as "of his own construction." One concern is the reliability of the claim, made forty years after the expedition's return, that the air gun in the estate sale was the air gun of the expedition. That air gun was withdrawn from the sale and lost to view, at least for a time.

Isaiah Lukens was born in 1779, lived in Horsham Pennsylvania, apprenticed there with his father Seneca Lukens, and moved to Philadelphia about 1811. He was a notable craftsman and machinist, making clocks, watches, scientific instruments, and air guns. He was a founder of the Franklin Institute and a member of the American Philosophical Society (both in Philadelphia). He made the clock in Independence Hall.[28] Dates are lacking for the surviving Lukens air guns,

25 Journal entries of Aug. 30, 1803; Aug. 3, 1804, Aug. 20, 1804, Oct. 10, 1804, Oct. 27, 1804, Oct. 29, 1804, Jan. 16, 1805, Jun. 9 1805, Jun. 10, 1805, Aug. 7, 1805, Aug. 17, 1805, Jan. 24, 1806, Apr. 3, 1806, May 11, 1806, and Aug. 11, 1806.

26 Moulton, Vol. 3, p. 209.

27 Charter Harrison Jr., "The Lewis and Clark Air Gun," *The Gun Report*, (May 1956), pp. 6, 34-35; Charter Harrison Jr., "More on the Lewis and Clark Air Gun," *The Gun Report*, (June 1956), p. 28; Henry Stewart Jr., "The American Air Gun School of 1800-1830," *Monthly Bugle* (Pennsylvania Antique Gun Collectors Association), 89, (1977), pp. 2-7; Roy M. Chatters, "The Not So Enigmatic Lewis and Clark Air Gun," *We Proceeded On*, 3, no. 2, (May 1977), p. 4-7; Ashley Halsey Jr., "The Air Gun of Lewis and Clark," *American Rifleman*, (August 1984), pp. 36-37, 81-82; Robert D. Beeman, "Proceeding On to the Lewis & Clark Airgun," in Robert D. Beeman and John B. Allen, *Blue Book of Airguns*, (Minneapolis: Blue Book Publication, 2002) 2nd ed., pp. 50-77; Website Robert D. Beeman, "Proceeding On" To The Lewis and Clark Airgun II," http://www.beemans.net/Lewis%20&%20Clark%20Airgun.htm, 2004, Website Robert D. Beeman, "Did Meriwether Lewis Carry and Assault Rifle?" http://www.beemans.net/Lewis%20Assault%20Rifle.htm, 2004;

28 Brooks Palmer, *The Book of American Clocks*, (New York: MacMillan, 1950), p. 235; George H.

but available evidence suggests that they were made after the expedition.[29]

Six Lukens air guns survive, four signed and two unmarked. One particular gun, now in the museum of the Virginia Military Institute, is claimed to be the air gun of the expedition. Repairs to its main spring, front sight, hammer, and a lock screw are consistent with brief mention of repairs made to the air gun during the expedition. This air gun is 49 inches long, with a 32 inch brass or bronze barrel, .31 caliber, and rifled. It fires one shot at a time, each bullet being loaded from the muzzle with a ramrod, like a conventional rifle of the period. Among the surviving air guns made by Lukens, this one is the smallest.

But the historical consensus now is that Lewis took a Girandoni air rifle on the expedition.[30] Bartolemeo Girandoni of Vienna designed and manufactured an innovative and powerful air rifle which was adopted by the Austrian Army in 1780 as a silent – and secret – weapon. By 1800 about 1500 Girandoni air rifles were in use by the Austrian Army.[31] Other gunsmiths in Europe made single copies of this design for private individuals, before and after 1800. An Austrian government report of January 20, 1801 states that 399 Girandoni air guns had been lost in battle,[32] so there were many more potential expedition air guns circulating in Europe before 1803 than Lukens guns, if any, available in America. The Girandoni-style air gun is a large caliber rifle, near 0.50 caliber, 48 inches overall, with a magazine holding about 20 round lead bullets. The magazine is a short tube lying next to the barrel on the right side, looking something like a second and shorter barrel. The entire butt is a welded steel tube that serves as the air reservoir. Loading a shot involves working a short horizontal bar or breech block that passes through the breech and magazine from left to right against a long external spring on the right side. A bullet moves from the magazine into an opening in the bar, and then into the breech when the bar is released and moves back to the left. Cocking the hammer prepares the air release. This takes a few seconds at most. Nothing is loaded from the muzzle. The gun is not an automatic, but it is a true repeater: twenty shots can be fired with one charge of air by simply working the breech block and hammer.

Although no expedition member described the air gun, there are accounts from two other observers. Colonel Thomas Rodney, a judge traveling to Mississippi Territory, visited with Lewis on September 7, 1083, in Wheeling, Virginia, and recorded the day in his journal. Lewis showed the air gun to Rodney and others with Rodney, and fired the gun several times. Rodney wrote "... when in perfect order she fires 22 times in a minute. All the balls are put at once into a short side

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Eckhardt, *Pennsylvania Clocks and Clockmakers*, (New York: Devin-Adair, 1955), pp. 183-184; James B. Whisker, *Pennsylvania Clockmakers and Watchmakers* (Lampeter, Wales: Edwin Mellen Press, 1996), p. 164.

29 "Lukens moved to Philadelphia (from working in his father's shop in Horsham, PA) in 1811. The first listing I could find in the Philadelphia business directories was in 1813 as a `turner' (of lathes). ... Lukens is in the business directories until 1830.... I have looked at all I could find in Philadelphia libraries. A companion of Lukens wrote in 1822 that `Lukens was chiefly engaged in making town clocks, but found time, with never more than the assistance of one or two men, to finish two or three small lathes and an air gun or two in the course of a year, for which there were always ready purchasers.' Lukens was primarily a clockmaker, a maker of small lathes (of a style he invented), and a machinist." Michael F. Carrick, personal communication.

30 Michael F. Carrick, "Meriwether Lewis's Air Gun," *We Proceeded On*, 29, no. 4, (November 2002), pp. 13-19; Michael F. Carrick, "Meriwether Lewis' Repeating Air Gun," *The Gun Report*, (January 2003), pp. 28-36; Michael F. Carrick, "More on Lewis's Air Gun," *We Proceeded On*, 30, no. 2, (May 2004), pp. 2-3.; Website Joseph Mussulman, *Capt. Lewis' s Medicine Gun,* http://www.lewis-clark.org/content/content-channel.asp?ChannelID=249, 2004.

31 Carrick 2003, p. 32.

32 Ibid., p. 35.

barrel and are then dropped into the chamber of the gun one at a time by moving a spring; and when the trigger is pulled just so much air escapes out of the air bag which forms the britch of the gun as serves for one ball. It is a curious piece of workmanship not easily described...."[33] This description closely matches the Girandoni gun. The "side barrel" magazine is particularly distinctive, and a Lukens gun never could fire 22 shots in a minute. Some fanciful material is present elsewhere in Rodney's journals,[34] but Rodney's editors state he was "closely observant and unquenchably curious."[35] Rodney's visit is corroborated by Lewis's journal entry for September 8, 1803.[36] To question Rodney's account is to ask why did Rodney correctly describe the unusual Girandoni air gun, with a mechanism found on no other gun, if Lewis showed him something else?

One other account indicates that the expedition air gun was a repeater. Charles McKenzie was a young clerk for the North West Company, on a trading expedition to the Hidatsa villages in the winter of 1804-1805, at the same time the Lewis and Clark Expedition wintered over there. He later wrote "The Indians admired the air gun as it could discharge forty shots out of one load – but they dreaded the magic of the owners."[37] This might mean it could fire many times on one charge of air, each bullet being separately loaded, but it sounds like it was a repeater. The discrepancy between McKenzie's statement of forty shots in one load and the Girandoni-style twenty shot magazine is puzzling, but an error may have crept into the only surviving copy of his journal, while the description preserves the essential attribute of many "shots out of one load."[38] The Rodney and McKenzie accounts are both consistent with a Girandoni-style gun, and not consistent with the surviving air guns made by Lukens or his associates.

There is a way to make all the records agree. Perhaps Lukens obtained the expedition air gun after Lewis's death -- he clearly had an interest in air guns -- and it was a Girandoni-style air rifle. Forty years later it appeared in his estate. Incidentally, a Girandoni-style air gun could have a forty shot magazine, simply by a longer magazine tube.

Pistols

Captain Lewis requisitioned "1 P[air] Horsemans Pistols" from the Schuylkill Arsenal in Philadelphia in May 1803.[39] Although details of these pistols are not recorded, two kinds of horseman's pistol were on hand in large numbers in the Schuylkill Arsenal at that time: the "North and Cheney 1799" pistol and the "McCormick style" pistol.

Simeon North of Berlin, Connecticut, a noted gunmaker with a 53 year career supplying pistols and rifles for the U.S. military, and an early innovative New England industrialist, accepted his first contract with the government on March 9, 1799, for five hundred pistols of what is now

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33 Dwight L. Smith, and Ray Swick, eds., *A Journey through the West Thomas Rodney's 1803 Journal from Delaware to the Mississippi Territory,* (Athens: Ohio University Press, 1997), p. 50.

34 Beeman, 2004a.

35 Carrick, 2004, p. 3.

36 Moulton, Vol. 2, p. .

37 W. Raymond Wood and Thomas D. Thiessen, *Early Fur Trade on the Northern Plains: Canadian Traders Among the Mandan and Hidatsa Indians, 1738-1818* (Norman: University of Oklahoma Press, 1985), p. 232.

38 McKenzie's "accounts were apparently written about 1809-1810...." The surviving manuscript is "Narrative C, which is an unknown hand, and probably does not represent Charles McKenzie's original composition on these subjects, which are lost." Wood and Thiessen, pp. 223; 227.

39 Jackson, Vol. 1, p. 97.

called the U.S. Model 1799 pistol, or the "North and Cheney 1799" pistol. North's partner was his brother in law, Elisha Cheney. All five hundred pistols were received by January 24, 1801 at the Schuylkill Arsenal in Philadelphia. A later contract for fifteen hundred pistols of the same model was completed and the guns received in September 1802 at the New Haven, Connecticut storeroom.[40] The pistols made for the second contract probably were not available to Lewis in Philadelphia in 1803.

The North and Cheney 1799 pistol closely follows the French Model 1777 pistol, also called the Charleville or St. Etienne pistol, an unusual design with a brass frame, using wood only for grips. The American version is 14 ½ inches overall, with an 8 ½ inch barrel, one inch longer than the French pistol. The caliber is 0.69, using the same bullet as the Charleville pattern musket, and the gun weighs about 3 pounds. The first 500 contract pistols were stamped S. NORTH & E. CHENEY BERLIN in a curve on the underside of the brass frame near the trigger, and US was stamped on top of the barrel at the breech. Serial numbers are marked internally.[41] Fewer than ten pistols of this contract are known to survive.

In 1797 or 1798 the storekeepers at the Schuylkill "military storeroom" in Philadelphia issued gun parts to several local gunsmiths for assembly into pistols.[42] Delivery of horseman's pistols were noted from gunsmith John Miles in October and December 1798 (200 pistols total) and from Robert McCormick in August 1799 (98 pistols). Of fewer than 10 guns remaining of this lot, two are marked McCormick and the others are unmarked. The few surviving guns of these "1799 Contract" or "McCormick style" horseman's pistols are near 16 ¼ inches overall, with round barrels 9 ¾ to 10 ¼ inches long in calibers 0.65 to 0.67, and weigh near 2 ½ pounds. Brass mountings include a butt cap with short side extensions, a single ramrod thimble, the trigger guard, and a brass band at the muzzle; the full stock is walnut. The locks were purchased from Ketland & Company of London and Birmingham by the federal government.[43] The Schuylkill Arsenal also may have had on hand other kinds of horseman's pistols; for example, the original French Charleville pistol was used by U.S. officers at that time.

On the expedition each of the captains carried one of the horseman's pistols. Among the Shoshones, Clark wrote on August 29, 1805 "I purchased a horse for which I gave my Pistol 100 Balls Powder & a Knife."[44] For Lewis the critical moment with a pistol was the fight with the Piegan Blackfeet early on July 27, 1806: "I jumped up and asked what was the matter which I quickly learned when I saw drewyer in a scuffle with the indian for his gun. I reached to seize my gun but found her gone, I then drew a pistol from my holster...."[45] After a pursuit on foot of some 300 yards, he fired at a Blackfeet warrior who was driving off the horses. The warrior was hit but was able to return fire and nearly hit Lewis. Blackfeet accounts say the injured man died.[46] These are the only shots fired at other humans during the expedition.

Lewis also purchased "1 Pair Pocket Pistols, Secret Triggers" for ten dollars from Robert

40 Samuel E. Smith and Edwin W. Bitter, *Historic Pistols The American Martial Flintlock 1760-1845,* (New York: Scalamandre, 1985), p. 123; Reilly, p. 168.
41 Smith and Bitter, pp. 126-128.
42 Reilly, pp. 164-166.
43 Smith and Bitter, pp. 126-128; Reilly, pp. 164-168.
44 Moulton, Vol. 5, p. 178.
45 Moulton, Vol. 8, p. 134.
46 James P. Ronda, *Lewis and Clark Among the Indians*, (Lincoln: University of Nebraska, 1984), p. 242.

Barnhill at 63 North Second Street in Philadelphia on May 21st, 1803.[47] Pocket pistols, also called screw-barrel pistols and box lock pistols, were small in caliber and small in size, small enough to fit in a pocket, often only four to five inches long. The gun was loaded by unscrewing the barrel from the lock, loading powder and ball into a chamber in the box-shaped lock, and screwing the barrel back on. There was no ramrod, but there was a small wrench to tighten the barrel. Some pocket pistols had a "secret" trigger which folded out of sight, into the handle. The trigger swung into place when the hammer was cocked. There is no further mention of the pocket pistols in other records of the expedition.

The same request by Lewis mentioned previously for reimbursement of a fowling piece given in trade also indicates that he traded a personal pistol for supplies. On the return journey, and very short of trade items, on April 29, 1806, Lewis wrote "we gave small medals to two inferior cheifs of this nation and they each presented us a fine horse in return we gave them sundry articles and among others one of my case pistols and several hundred rounds of ammunition."[48] Case pistols are a matched pair of high-quality pistols, kept in a lined case or box, such as gentlemen used for dueling.

Early in his Army career, Lewis, then an Ensign, challenged a superior officer to a duel, contrary to regulations. The duel did not occur.[49] The outcome was that Lewis was transferred from the post where the incident occurred, to another fort, where he met Willima Clark, lived in Clark's quarters. Perhaps the case pistols of the expedition were the same pistols which led to a key event in Lewis's life.

Swivel Gun and Blunderbuss

The expedition had one swivel gun and two blunderbusses. A swivel gun is a small version of the 18th century naval cannon, about 30 inches long and with a bore near 2 inches, usually cast in iron but occasionally cast in bronze. It swivels on a U-shaped yoke, standing on a vertical pin in the rail of a ship or in the wall of a fortification, and is easily and quickly pointed in any direction. Swivel guns could also be mounted on a miniature naval gun carriage. Swivel guns can fire a single solid ball but usually were loaded with a handful of shot – or even musket balls - and used as a kind of extra-large shotgun to repel attackers. Blunderbusses are short, heavy, smooth-bore flintlock shoulder arms used for defense, usually mounted on a pivot in the rail of ship or boat, or on the top of a wall. The muzzle is flared to assist rapid loading. Going upriver in 1804 the swivel gun was mounted in the bow of the keelboat and the blunderbusses were on the pirogues. During the winter of 1804-1805, the swivel gun and blunderbusses apparently were mounted on the walls of Fort Mandan. The time they were most important for defense was during confrontations with the Teton Sioux, September 25 and 28, 1804. On the first occasion Sergeant Ordway wrote "Capt. Lewis who was on board ordered every man to his arms. the large swivel loaded immediately with 16 Musquet balls in it the two other Swivels loaded well with Buck Shot, Each of them manned."[50] On the 28th a group of braves seized the keelboat's cable to prevent departure and demanded more gifts. Clark wrote that he spoke firmly, gave a carrot of tobacco to a chief, and prepared to fire the swivel gun.[51] The chief jerked the cable from the

47 Jackson, Vol 1. p. 91.
48 Moulton, Vol. 7, p. 183.
49 E. G. Chuinard, "The Court-Martial of Ensign Meriwether Lewis," *We Proceeded On*, 8, no. 4, (November 1982), pp. 12-15.
50 Moulton, Vol. 9, p. 68.
51 Moulton, Vol. 3, p 124.

braves and the expedition departed.

Returning to the Hidatsa villages on the Missouri River on 14 August 1806, Clark wrote "we directed the blunderbusses be fired several times...." as a peaceful salute.[52] The swivel gun was presented to the Hidatsa chief One Eye, with an admonition by Clark to heed the words of the captains and to remember those words whenever the gun was fired.[53] The blunderbusses sounded for the last time at the return to St. Charles, Missouri, September 21, 1806. Clark wrote: "at 4 P M we arived in Sight of St. Charles, the party rejoiced at the sight of this Hospital [hospitable] village plyed thear ores with great dextreity and we Soon arived opposit the Town, ... we saluted the Village by three rounds from our blunderbuts and the Small arms of the party, and landed near the lower part of the town. we were met by great numbers of the inhabitants."[54] The expedition was over.

Traveling across an unmapped and unknown wilderness, remote from familiar sources of aid and supply, guns were indispensable to the explorers. The Harpers Ferry rifles, the Charleville pattern muskets, the air gun, Clark's “little rifle,” the plain trade muskets and Clark's elegant fusil, Lewis's fowling piece and his case pistols, the pocket pistols with secret triggers, the horseman's pistols, the small cannon, and the blunderbusses made a kind of traveling exhibition of firearms technology of the day. Many of these guns were little used on the expedition, and others, especially the rifles and muskets, were essential to survival in the wilderness and for the successful return of the expedition.

August 11, 2010

Boulder, Colorado

52 Moulton, Vol. 8, p. 298.
53 Ibid., p. 304.
54 Ibid., p. 369.

EXHIBIT CARRICK-4

A Brief History of the Airgun of Meriwether Lewis and the Corps of Discovery

Philip Schreier

"Everything old is new again." Or so says the song.[1] It was one way of saying that some things in life that we hold to be bedrock foundations of our shared belief systems are considered incontrovertible, but, as we all have seen within our own brief span of life so far, nearly everything in life is subject to change without notice. History and gun collecting are no exceptions.

Recently, one of the great stories of interest to the gun-collecting community has been the history of the "Lewis & Clark air gun." Our first knowledge of it comes from the pen of Meriwether Lewis, one of the co-leaders of the expedition known as the Corps of Discovery, or as we have come to popularly know it, "The Lewis & Clark Expedition."

In the celebrated journals of the expedition, Lewis mentions the air gun on the very first page, his very first entry in what eventually totaled three years worth of notes.

> Capt. Lewis August 30, 1803
>
> "Left Pittsburgh this day at 11'ock with a party of 11 hands 7 of which are soldiers, a pilot and three young men on trial they having proposed to go with me throughout the voyage. Arrived at Bruno's Island 3 miles below halted a few minutes. went on shore and being invited on by some of the gentlemen present to try my airgun which I had purchased brought it on shore charged it and fired myself seven times fifty five yards with pretty good success; after which a Mr. Blaze Cenas being unacquainted with the management of the gun suffered her to discharge herself accedentaly the ball passed through the hat of a woman about 40 yards distanc cuting her temple about the fourth of the diameter of the ball; shee fell instantly and the blood gusing from her temple we were all in the greatest consternation supposed she was dead by [but] in a minute she revived to our enespressable satisfaction, and by examination we found the wound by no means mortal or even dangerous."[2]

We can see from this first entry that the air gun was the center of excitement and controversy from the outset of the expedition. Not much has changed in the last 200 years. At different times over just the last 50 years, no less than four institutions have claimed they hold the original air gun in their collections. As the bicentennial of the expedition drew

closer, dozens of publications illustrated and described the air gun and how it worked with convincing authority.

My own institution is not immune from the confusion/controversy surrounding the Lewis & Clark air gun. For many years after I began work at the NRA's National Firearms Museum, I regularly received phone calls from people asking if the Lewis & Clark air gun was on exhibit in our galleries. I knew we had air guns contemporary to the period, or so I thought at the time, but I was unaware of any provenance linking any of them to the great expedition of the northwest. Over the years the calls persisted to the point that I noticed a pattern beginning to develop. Finally I asked one caller just where he had heard we were the guardians of such a National Treasure. Their reply floored me. They said they had called the Smithsonian Institution and someone there told them that we had the gun.

I had vaguely recalled a ball reservoir style English-made gun in the Smithsonian as having been the Lewis & Clark air gun. I could not remember where I had heard it so I called Harry Hunter, the Smithsonian's resident firearms expert, and put the question to him. He replied that it had once been believed the Lewis & Clark air gun was of the aforementioned style but he initially told me the NRA had a single-shot air gun of substantial caliber that was carried on the Lewis & Clark expedition.

Still relatively new to the game and not knowing much better, I told National Firearms Museum (NFM) Curator Doug

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Additional articles available at http://americansocietyofarmscollectors.org/resources/articles/

Figure 1. Air power diplomacy, commissioned by Dr. Robert Beeman ©2005. Artist Warren Lee.

Wicklund that, according to the Smithsonian, we had the Lewis & Clark air gun. We looked over the collection and found we only had one gun of the period that matched the description and settled on our own .54 caliber air gun. It is important to note that most of the guns in our collection that predate 1968 are without records. Many times, as in the case of our Mayflower wheel lock, we have relied on past issues of *American Rifleman* to establish provenance on some of our historic pieces. Without any corresponding paperwork or affidavits to prove or disprove the connection, we remained cautiously optimistic that we had the historic gun. After all, the gun was .54 caliber and in 1990 we **all** knew that the expedition was armed with .54 caliber, 1803 Harper's Ferry rifles, didn't we . . . ?

Soon air gun collectors began to hear whispered rumblings that the NFM may have the Lewis & Clark air gun. Dr. Robert Beeman and Tom Gaylord inspected our gun and determined that it was of English make and possibly made not any earlier than 1820. They remarked that it was by then common knowledge V.M.I. had an air gun donated by the late Henry Stewart who had done extensive research and determined that the air gun bearing the name "Isaiah Lukens" had been carried and used by Lewis & Clark.

Somewhat dejected and yet happy that we had never done any major press around "*our*" air gun, I again spoke to Harry Hunter and asked a question I should have asked much earlier. What made him think our air gun was the Lewis & Clark air gun? Harry replied that sometime recently (for Harry, who retired from the Smithsonian with 50 years government service, "recently" could mean from the Nixon administration) it was determined that the Lewis & Clark air gun was owned by Henry Stewart, whom Harry had thought, somewhat incorrectly, had donated the gun to the NRA. In fact Stewart did indeed donate an air gun that he believed had Lewis & Clark provenance to V.M.I. after the NRA somewhat reluctantly turned down his collection for their own National Firearms Museum.

Compounding matters somewhat was the 1957 donation of a ball reservoir type air gun to the Smithsonian by G. Charter Harrison. Harrison based his information on a passage of the journals:

> Capt. Lewis Monday June 10, 1805
>
> " . . . Shields renewed the main Spring of my air gun we have been much indebted to the ingenuity of this man on many occasions; without having served any regular apprenticeship to any trade, he makes his own tools principally and works extreemly well in either wood or metal, and in this way has been extremely serviceable to us, as well as being a good hunter and an excellent waterman."[3]

PVT Whitehouse elaborated:

> "The black Smiths fixed up the bellowses & made a main Spring to Capt. [Lewis's] air Gun, as the one belonging to it got broke."[4]

This passage alone has been the subject of much speculation over the years and yet may be one of two key passages that help identify the original air gun. Harrison, in a 1957 *Gun Report* article, theorized that the main spring repair was actually a solder job to the copper ball reservoir on the underside of the gun he donated to the Smithsonian.[5] In an article published only months earlier he had originally

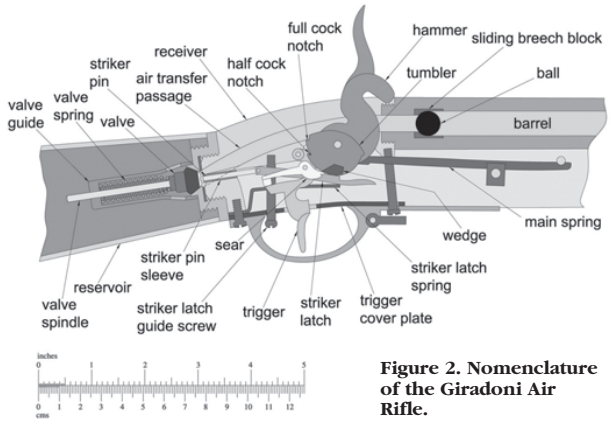


Figure 2. Nomenclature of the Giradoni Air Rifle.

Figure 3. Girardoni Air Rifle, full view, right side.

identified an Isaiah Lukens marked air gun with a replaced hammer and main spring as "The Lewis & Clark air gun."[6] Thus begins 50 years of controversy.

The Lukens air gun that Harrison illustrates in his article is a single-shot, stock-reservoir gun with an armory bright mainspring and a hammer identical to that of an 1836 U.S. martial pistol. It is his contention that these replacement parts indicate where field repairs were required that were made by blacksmith Shields on June 10, 1805.

This Lukens air gun, which has since come to be known as the Lukens DNH air gun (DNH meaning *double necked hammer*, a reference to its 1836 pistol hammer), has for some time been regarded as *the* Lewis & Clark air gun. The fifth footnote in the modern edition of the Journals of Lewis & Clark edited by Gary Moulton perpetuates this claim.

> "[5]. This weapon, which much impressed the Indians along the expedition's route, was probably manufactured by Isaiah Lukens, horologist and gunsmith of Philadelphia; it was returned to him after Lewis's death in 1809, sold at auction on Lukens's death in 1847, and discovered and identified in 1976. Probably more useful for impressing the natives than for hunting, it had a butt reservoir and was much like a Kentucky rifle in appearance. Stewart (AAGS); Chatters; Halsey; Wolff, 131–32."[7]

The most recent editor of the *Journals* is Dr. Gary E. Moulton, the first scholar to utilize all known copies of the journals to recount day by day and word for word every notation made by the members of the Corps of Discovery. These editions, numbering 13 volumes and over 1 million words, are considered to be the single most comprehensive accounting of the expedition as well as the last word on the subject. Their publication between 1983 and 2001 was the culmination of 20 years of research and writing.

The publication of the journals was popularly received by the large community of Lewis & Clark aficionados, some of whom nearly 40 years ago formed the Lewis & Clark Trail Heritage Foundation (L&CTHF). Among their members and contributors to its journal, *We Proceeded On*, is none other than a staff editor of *Gun Report* magazine, Michael Carrick, of Turner, Oregon. Carrick immediately delved into the journals, reading all 13 volumes, and made copious notes on the mention of the firearms used on the expedition. To this day, no one holds a better claim to being an expert on the firearms of the expedition than Michael. His research and database of excerpts are unequaled on the subject.

So it came somewhat as a shock to Michael when in July of 2001 a rare book dealer by the name of Ludd Trozpek approached him at the 34th annual meeting of the L&CTHF and asked him to describe the method of loading the air gun carried by Captain Lewis. Michael recounted the process of priming and loading the air gun that Henry Stewart had donated to V.M.I. Trozpek listened intently and then said that was not at all consistent to the description recorded in the diaries. Michael, knowing the journals and the firearms descriptions better than anyone, politely explained that there was no actual description of the air gun mechanism in any of the combined journals of Lewis & Clark. At that point Trozpek demurred and said that he had not meant the Lewis & Clark journals but the diary of Thomas Rodney. He then produced a most extraordinary manuscript.[8]

Thomas Rodney was the younger brother of Delaware's Caesar Rodney, a signer of the *Declaration of Independence*. In September of 1803 he was on his way West to assume a Judgeship as an appointee of President Thomas Jefferson. On September 8, 1803 Rodney's and Lewis' paths crossed in Wheeling, Virginia. Lewis made note of the meeting in his journals.

From the journals:

> Capt. Lewis September 8, 1803
>
> "8th this day wrote to the President, . . . dined with Colo. Rodney and his suit, in the evening they walked down to my boat and partook of some watermellons."[9]

Fortunately for future historians, Rodney was a bit more verbose about the encounter . . .

> Thomas Rodney September 8, 1803
>
> "Visited Captain Lewess barge. He shewed us his air gun which fired 22 times at one charge. He shewed us the mode of charging her and then loaded with 12 balls which he intended to fire one at a time; but she by some means lost the whole charge of air at the first fire. He charged her again and then she fired twice. He then

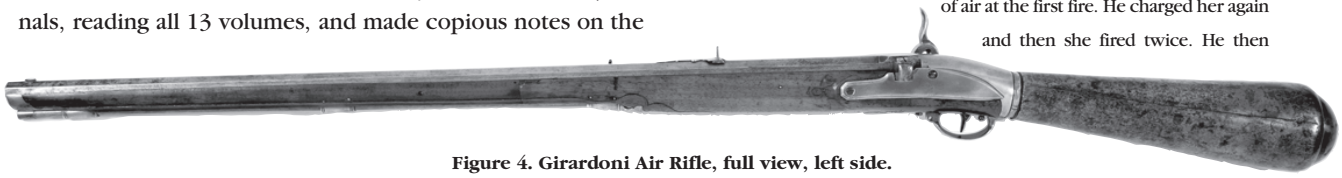


Figure 4. Girardoni Air Rifle, full view, left side.

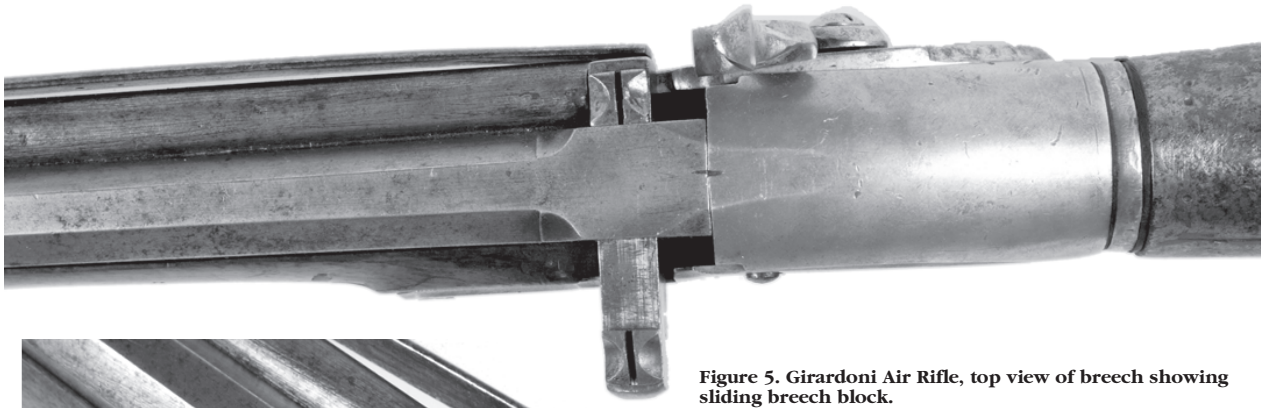


Figure 5. Girardoni Air Rifle, top view of breech showing sliding breech block.

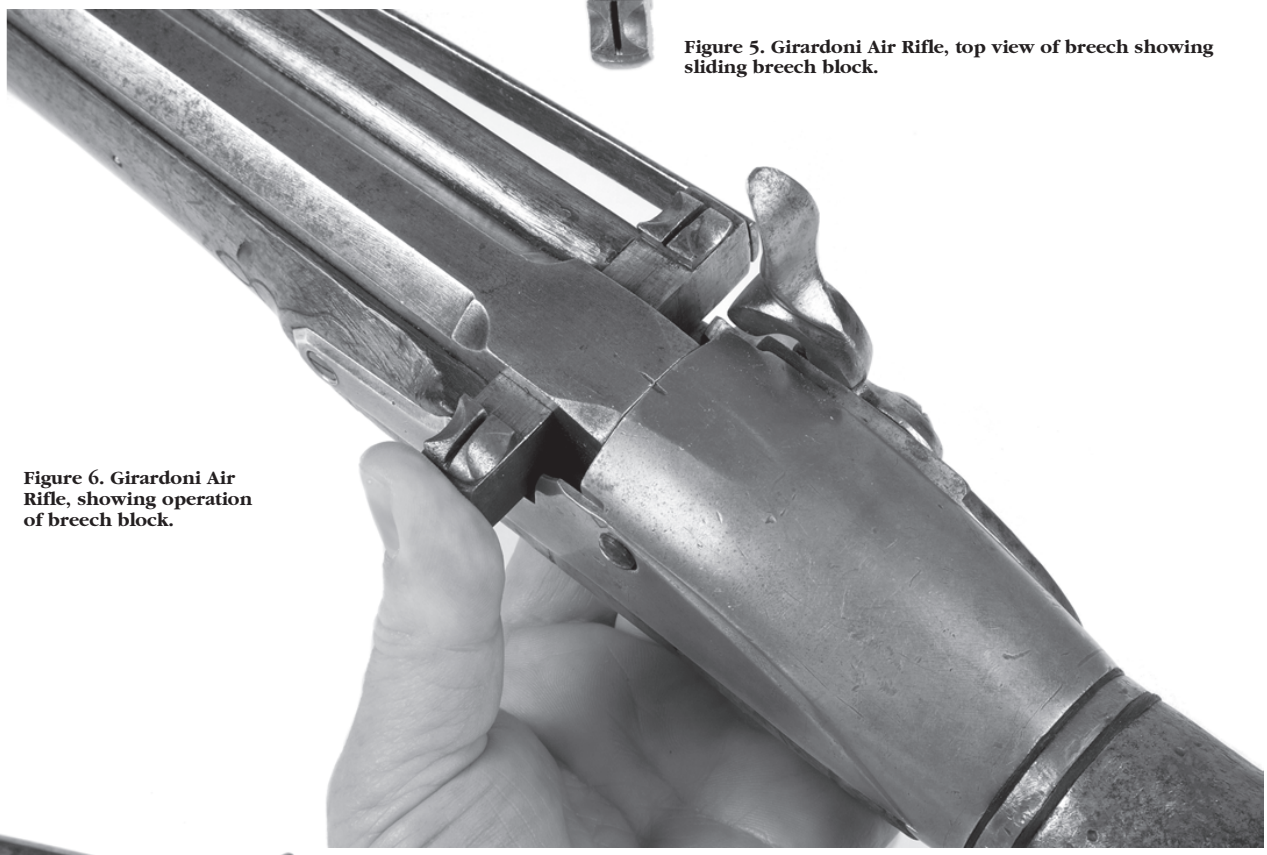


Figure 6. Girardoni Air Rifle, showing operation of breech block.

Figure 7. Girardoni Air Rifle, showing underside of rifle with detail of magazine latch.

found the cause and in some measure prevented the airs escaping, and then she fired seven times; but when in perfect order she fires 22 times in a minute. All the balls are put at once into a short side barrel and are then droped into the chamber of the gun one at a time by moving a spring; and when the triger is pulled just so much air escapes out of the air bag which forms the britch of the gun as serves for one ball. It is a curious peice of workmanship not easily discribed and therefore I omit attempting it. [. . .] Went on board Captain Lewes's barge to eat watter millons and then returned to coffee."[10]

The journals make it perfectly clear; it is now considered irrefutable proof and undeniable that Rodney and Lewis shared watermelons together!

For a period of time, that point was about all that some writers on the subject were able to agree upon.

The air gun that Rodney described was unique enough to be instantly recognizable as the type designed by C.G. Girardoni and adopted by the Austrian military in 1780 and 1799. French Field Marshal Edouard Adolphe Casimir Joseph Mortier recounted to the English writer Colonel Thornton in his 1802 book, *A Sporting Tour Through France in the Year 1802,* that his men came under the fire of an air gun in 1800 during a battle with the Austrians (possibly the Battle of Marengo, June 14,1800). Again, subsequently during the battle of Wagram (July 5–6, 1809), French Marshal Lefebre reported their use by the enemy to Napoleon who supposedly ordered instant death to anyone caught using such a barbaric weapon against his legions.[11]

Girardoni was an inventor and designer who seemed to have a fascination with repeating firearms. An 18th century Samuel Colt, he once tried to produce a 12-shot repeating flintlock. An unfortunate mistake that caused the powder magazine on the gun to blow up cost him his right hand. He quickly devoted his attentions to guns powered by air rather than powder and is now best known for his repeating air gun that was adopted by the Austrian army.[12]

The description of a Girardoni is unique to air gun mechanisms. The gun has a butt stock that also serves as an air reservoir. This small air tank holds 800 psi of air pressure delivered by a rod piston pump device that takes close to 1500 strokes to reach capacity. Remember that your car travels on tires with only 35 psi.

On the right side of the rifled barrel was attached a small tubular magazine that held twenty-two .46 caliber lead balls. Gravity fed them into a sliding breech block held taut by a straight leaf spring. By flicking your thumb and forefinger against the breech, cocking the hammer with your off hand, you could load and fire the 22 shots in under a minute, just as described by Rodney.

Air guns were nothing new in the 1800 world. Some histories date them as early as 1560. They were however complicated and expensive to produce. Until Girardoni, their use in any numbers seemed impractical. It is estimated that the Austrians produced 1500 air guns for use against Napoleon. Each soldier was equipped with a number of pre-primed air reservoirs and magazine tubes, each with 22 rounds of ammo. A battalion of men armed with repeating rifles could lay down a devastating field of fire that could darken the sky with lead.

Mike Carrick's discovery in 2001 left many questions open about the Lewis & Clark air gun. I had long questioned the provenance of the Lukens DNH/Stewart/V.M.I. gun. Mr. Stewart had addressed this very Society at the Valley Forge meeting in 1976 and described the Lukens gun as the original Lewis & Clark gun. He based his findings on a copy of Berrell & Burr's 1847 catalog of the estate of Isaiah Lukens. The catalog noted lot #95.

95. 1 large Air Gun made for and used by Messrs Lewis & Clark in their exploring expeditions. A great curiosity.[13]

Stewart made some logical conclusions. Based on Harrison's findings in 1956 that this very Lukens DNH was *the* Lewis & Clark air gun, Stewart looked for further evidence and supposedly found it in the auction catalog of 1847. The catalog listing is all he felt was needed to convince himself of its provenance to Lewis & Clark. The Lukens DNH gun passed from Stewart to V.M.I. as per his bequest and has figured prominently in the bicentennial writings and illustrations of the Corps of Discovery.

Following my own misguided assumptions on the provenance of the Lewis & Clark air gun, in 2001, I set about to examine the

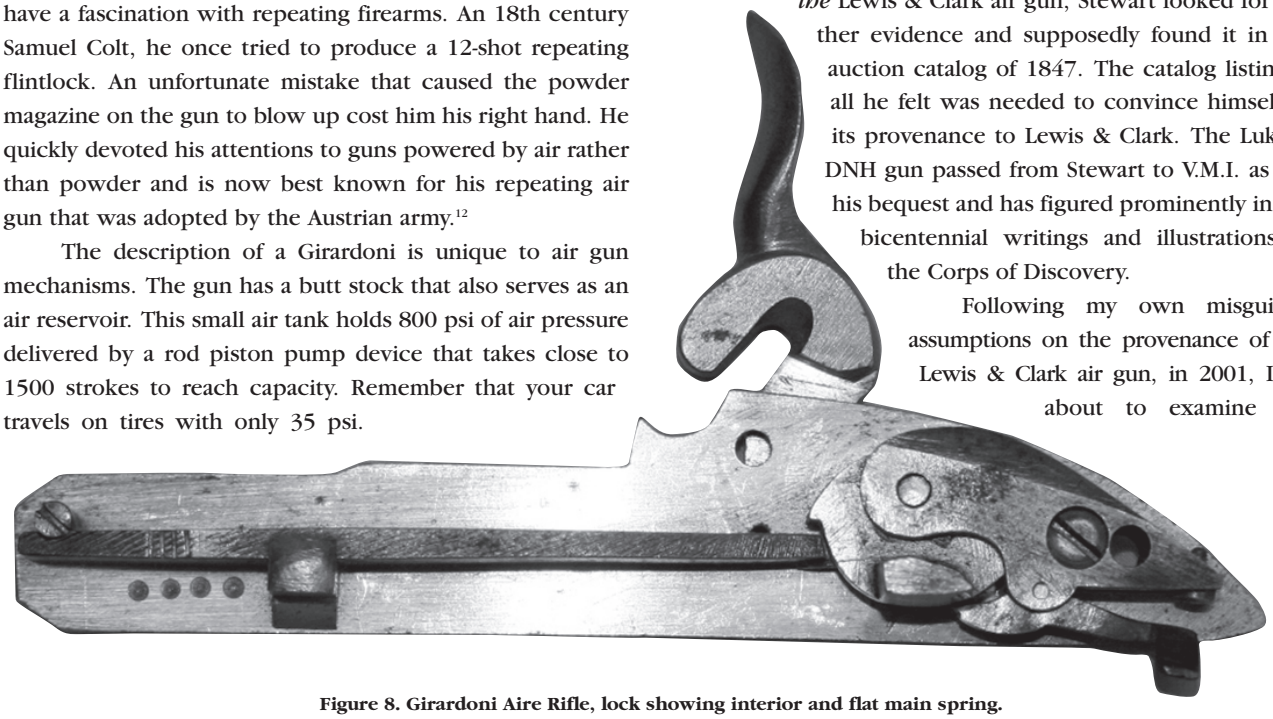


Figure 8. Girardoni Aire Rifle, lock showing interior and flat main spring.

claims of the Lukens DNH gun. My search started and ended with the 1847 auction catalog. There was nothing, absolutely nothing, in any records to establish a chain of custody from the auction to the gun Harrison introduced as the Lewis & Clark air gun in 1956. All the Lukens DNH gun had going for it was obvious postexpedition repairs to the main spring and hammer and the name Lukens was inscribed on the gun. Even if an identifying number or mark had appeared on the gun and was described by the auction catalog, it is questionable that even the catalog was correct in describing it as the Lewis & Clark air gun. Published accounts of anything are subject to verification and in the mid-nineteenth century we only have to look as far as the pages of the auspicious *New York Times*, for example, to read how General Jackson was killed and General Lee was captured at the battle of Antietam in September of 1862.

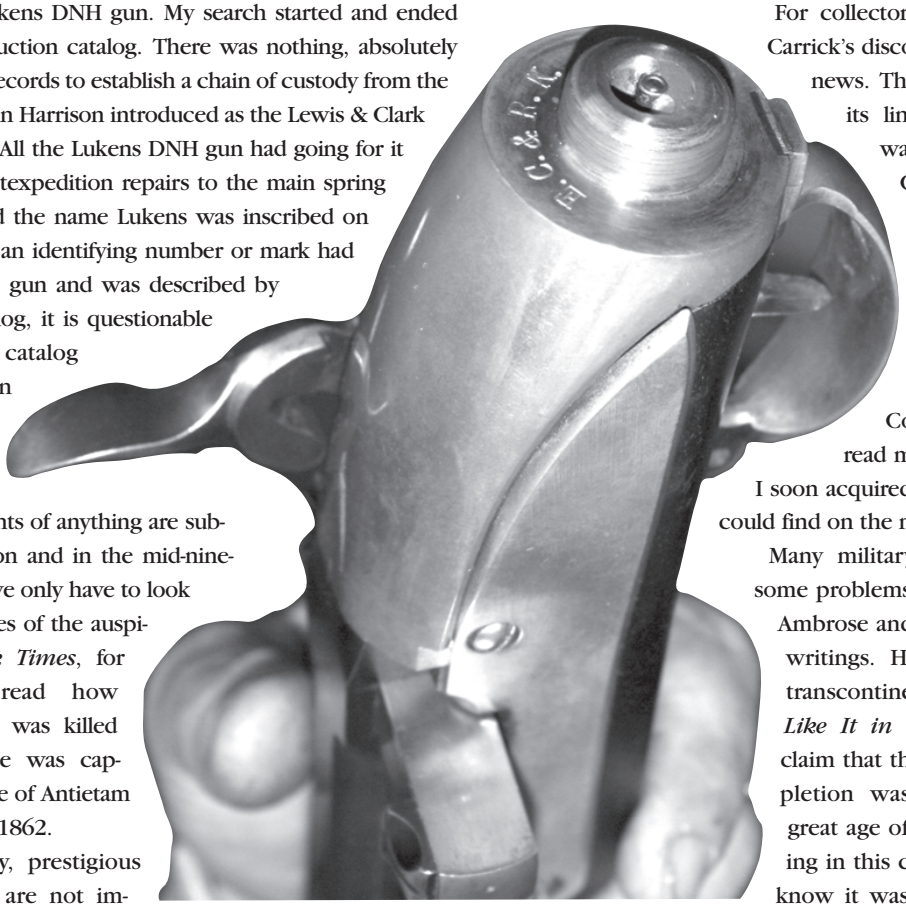


Figure 9. Girardoni Air Rifle, receiver showing striker pin retracted.

Even today, prestigious auction houses are not immune from presenting false claims as irrefutable truths. Take for example the gun that killed Jessie James. Two venerable and well-respected auction houses within the past 10 years have sold the gun that killed Jessie James at public auction with great public fanfare. The only problem is that one was a Colt and the other specimen was a Smith & Wesson. Someone has a bogus gun; the question is who to believe.

Such is the question with the Lewis & Clark air gun. Having zero provenance connecting the Lukens DNH gun with the 1847 auction or any other tying claim to the personal effects of Meriwether Lewis and, given the recent discovery of the Rodney journals, it would be irresponsible to assume that the Lukens DNH gun had anything at all to do with Lewis & Clark.

Let me be perfectly clear on one main point: I do not believe that any gun currently known can claim, with 100% certainty, to be the air gun of the Lewis & Clark expedition. We know from the journals that the gun was the personal property of Meriwether Lewis. Only government property was sold off in St. Louis following the expedition and Lewis was very particular about the difference between personal property and government stores. No known gun extant has any link to Captain Meriwether Lewis. End of story.

For collectors and historians alike, Carrick's discovery is indeed exciting news. The Girardoni system and its links to the Napoleonic war and now with the Corps of Discovery makes for fascinating conjecture. The then approaching bicentennial of the expedition and the interest in the firepower of the Corps intrigued me to read more on the subject and I soon acquired copies of everything I could find on the matter.

Many military historians have had some problems with the late Stephen Ambrose and some of his historical writings. His 2001 tome on the transcontinental railroad, *Nothing Like It in the World*, makes the claim that the railroad and its completion was responsible for the great age of industrial manufacturing in this country. We, of course, know it was the firearms industry that brought this all about. His 1992 bestseller, *Band of Brothers,* has been reviewed as an expanded version of David K. Webster's unpublished memoirs. No matter how you may feel about his methods and writings, he was a gifted historian and publicist. He had a personal obsession that intrigued him his entire life, and that was the expedition of the Corps of Discovery. For decades he read and researched it and for years he and his entire family retraced the route every holiday that they could manage. It was a lifelong interest that culminated in his 1996 book *Undaunted Courage*.

Ambrose seldom asks questions that he is unable to answer. Yet in *Undaunted Courage* he asks the same question, not once but three times: How could a relatively small expedition of soldiers and hunters travel so far, for so long, and return three years later to St. Louis having only sustained one causality, a death by natural causes?

Ambrose recounts the events of September 25, 1804.[14] Upon meeting the Sioux some Indians try to take control of the expeditions boat. Sgt. Ordway gives his account:

> SGT Ordway Tuesday September 25, 1804
> "a clear and pleasant morning.—all things made ready to receive the Band of the Souix nation of Indians, . . . when

30 odd was selected under the american Collours Capt. Lewis & Capt Clark went out to Speak and treat with them. Gave the 3 Chiefs 3 niew meddals & 1 american flag Some knives & other Small articles of Goods—& Gave the head chief the Black Buffalow a red coat & a cocked hat & feather &.C—likewise Some Tobacco.—[. . .]Capt. Lewis Shewed them the air Gun. Shot it Several times. then the Captains brought the 3 chiefs and one warrier they had with them. Gave the warrier a Sertifficate. then Shewed the chiefs Some curioussities. Gave them a draghm. they brought a quantity of fat Buffaloe meat and offered us the Captains accepted of Some of it & Gave them pork in return—then the Captains told them that we had a great ways to Goe & that we did not wish to be detained any longer,—they then began to act as if they were Intoxicated. with Some difficulty Capt. Clark got them to Shore. they then began to Show Some Signs of Stopping or attempting to Stop us. one of them Stayed on board the pearogue when Capt. Clark & the chiefs went out of it. the head chief the Black Buffaloe, Seized hold of the cable of the pearogue and Set down. Capt. Clark Spoke to all the party to Stand to their arms Capt. Lewis who was on board ordered every man to his arms. the large Swivel loaded immediately with 16 Musquet Ball in it the 2 other Swivels loaded well with Buck Shot, Each of them manned. Capt. Clark used moderation with them told them that we must and would go on and would go. that we were not Squaws, but warriers. the chief Sayed he had warriers too and if we were to go on they would follow us and kill and take the whole of us by degrees or that he had another party or lodge above this and that they were able to destroy us. then Capt. Clark told them that we were Sent by their great father the presidant of the U. S. and that if they misused us that he or Capt. Lewis could by writing to him have them all distroyed as it were in a moment."[15]

Ambrose writes:

"It was a dramatic moment. Had Lewis cried "Fire!" and touched his lighted taper to the fuse of the swivel gun, the whole history of North America might have changed.

. . . In short had the cannon fired, there might have been no Lewis & Clark Expedition.

. . . the Sioux would have been implacable enemies of the Americans, and in possession of the biggest arsenal on the Great Plains. For some time to come, they would have had the numbers and the weapons to turn back any expedition the United States could send up the Missouri."[16]

So why didn't the Indians just kill them all in their sleep or just overwhelm them by sheer numbers—the Corps of Discovery never numbered more than 40 at any given time. Why not overwhelm them and as Ambrose says come into "*possession of the biggest arsenal on the Great Plains*?"

The answer, I personally believe, is hidden in the text of the journals. Look again at Ordway's account of the events of September 25th:

"[. . .]all things made ready to receive the Band of the Souix nation of Indians, . . . when 30 odd was selected under the american Collours Capt. Lewis & Capt Clark went out to Speak and treat with them. Gave the 3 Chiefs 3 niew meddals & 1 american flag Some knives & other Small articles of Goods—& Gave the head chief the Black Buffalow a red coat & a cocked hat & feather &.C—likewise Some Tobacco.—"[17]

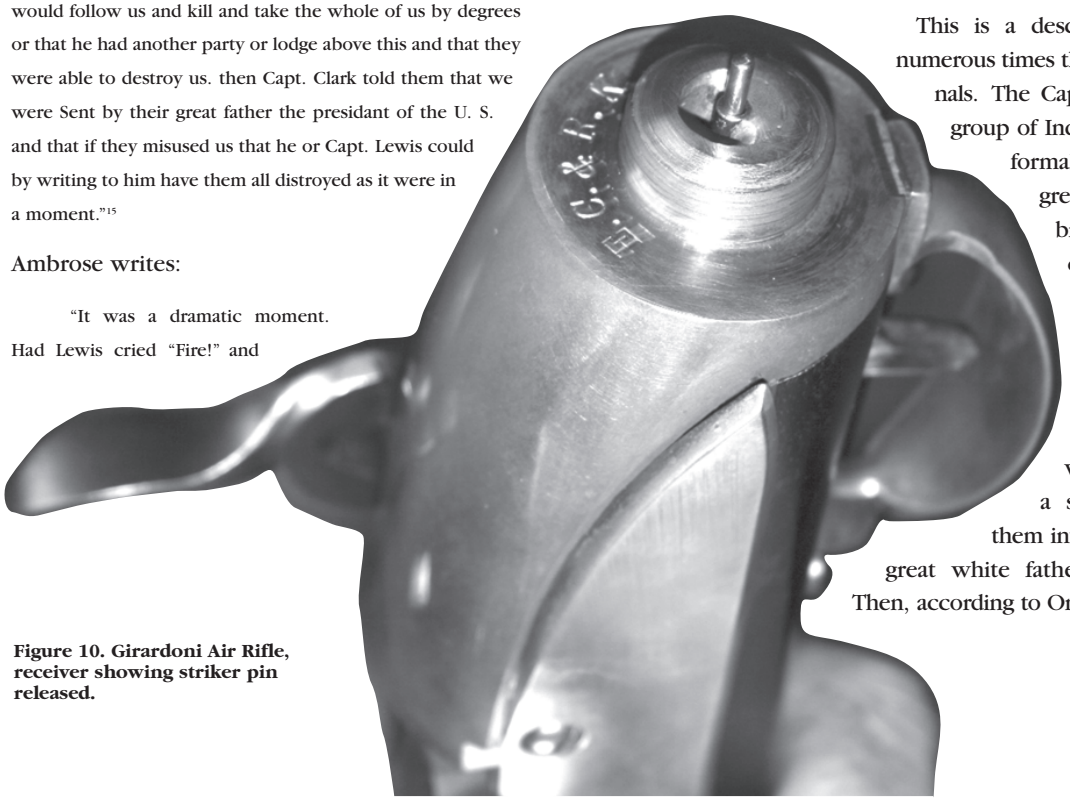


Figure 10. Girardoni Air Rifle, receiver showing striker pin released.

This is a description recounted numerous times throughout the journals. The Captains meet a new group of Indians and provide a formal dress parade to greet them: uniforms brushed and clean, chapeau du pays at the familiar jaunty tilt, and the stars and stripes flying overhead. They present the Chiefs with gifts; he makes a speech welcoming them into the family of the great white father in Washington. Then, according to Ordway . . .

Figure 11. Girardoni Air Rifle, valve and brass valve springs, original (left) and reproduction (right).

" . . . Capt. Lewis Shewed them the air Gun. Shot it Several times."[18]

According to Michael Carrick's research, there are 39 such passages in the journals where Lewis runs through this exact routine. Each nearly always ends with the same observation. On writing about the air gun the journals record the reactions as having *"astonished the nativs,"* and *"the air gun asttonished them verry much,"* and my personal favorite:

Capt. Lewis August 17, 1805

" . . . we communicated to them fully the objects which had brought us into this distant part of the country, in which we took care to make them a conspicuous object of our own good wishes and the care of our government. we made them sensible of their dependance on the will of our government for every species of merchandize as well for their defence & comfort; and apprized them of the strength of our government and it's friendly dispositions towards them. we also gave them as a reason why we wished to petrate the country as far as the ocean to the west of them was to examine and find out a more direct way to bring merchandize to them. that as no trade could be carryed on with them before our return to our homes that it was mutually advantageous to them as well as to ourselves that they should render us such aids as they had it in their power to furnish in order to haisten our voyage and of course our return home. that such were their horses to transport our baggage without which we could not subsist, and that a pilot to conduct us through the mountains was also necessary if we could not decend the river by water. but that we did not ask either their horses or their services without giving a satisfactory compensation in return.—They appeared well pleased with what had been said. the chief thanked us for friendship towards himself and nation & declared his wish to serve us in every rispect; . . . we next enquired who were chiefs among them . . . . we gave him a medal of the small size with the likeness of Mr. Jefferson the President of the U' States in releif on

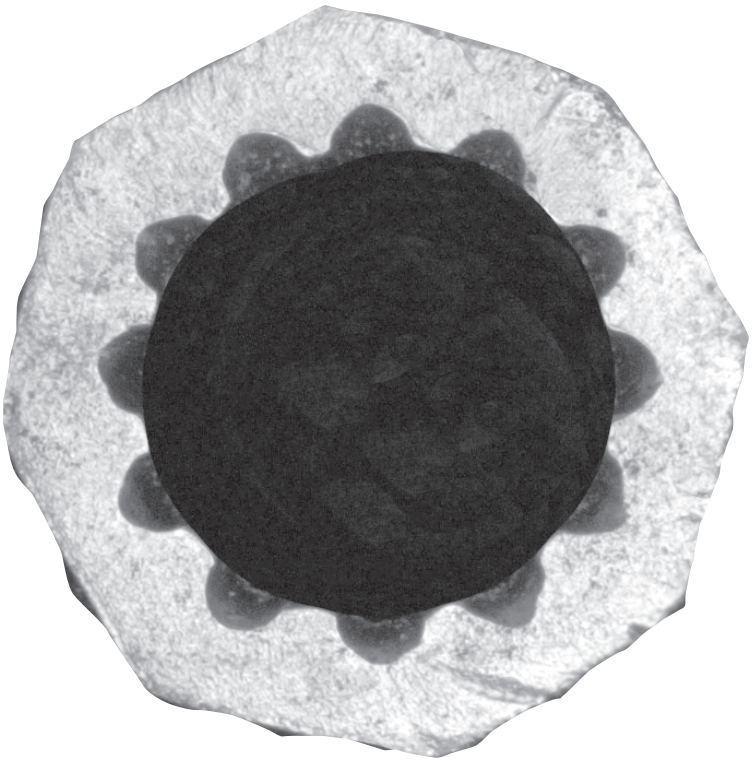


Figure 12. Girardoni Air Rifle, close up of rifling at muzzle.

Figure 13. Pouches and air pump for Girardoni Air Rifle, reproduction.

> one side and clasp hands with a pipe and tomahawk on the other, to the other Chiefs we gave each a small medal which were struck in the Presidency of George Washing Esqr . . . . every article about us appeared to excite astonishment in ther minds; the appearance of the men, their arms, the canoes, our manner of working them, the back man york and the segacity of my dog were equally objects of admiration. I also shot my air-gun which was so perfectly incomprehensible that they immediately denominated it the great medicine. the idea which the indians mean to convey by this appellation is something that eminates from or acts immediately by the influence or power of the great sperit; or that in which the power of god is manifest by it's incomprehensible power of action."[19]

When meeting new groups of Indians, Lewis had a routine worked out. Parade the men in uniform, fly the flag, give a speech welcoming them into the United States, show them gifts and firepower, and most importantly, show the air gun because it amazed them to great wonderment. It was Lewis' parlor trick, his slight of hand to intimidate the Indians into thinking that the explorers were even more powerful than they seemed. The Indians, whom Lewis never exposed the full contents of his keel boat or any of his supplies, never knew if the expedition had 1 or 40 air guns. To think that 30 or so explorers could lay down 22 shots with great accuracy within seconds must have impressed the Indians into a state of submissiveness and cooperation. Lewis traveled the West with an ace up his sleeve in the form of the repeating air gun. This type of intimidation could never have been possible with one single-shot air gun of the Lukens DNH design. Only the Girardoni is capable of obtaining the results that Lewis got from the Indians. Lewis must have planned this operation from the beginning; the results speak for themselves. The party was never molested in force and all but one man returned to St. Louis in 1806.

So to answer Ambrose's question, Lewis & Clark survived the trip, explored the West, added to the map of the U.S. twice her previous territory, and made friends of the Indians by following the golden rule of diplomacy . . . peace through superior firepower! (Or at least the perceived impression of superiority). The End (Maybe . . .)

Post Script: My obsession with the Lewis & Clark air gun caught the attention of two friends from Chambersburg, Pennsylvania, Rick Keller and Ernie Cowan, who became instantly taken by the Girardoni system. They contacted another friend of mine, Dr. Robert Beeman of California, and sought to borrow his Austrian military Girardoni from his collection for study. They were eventually given permission to take the gun apart to enable them to examine and copy the mechanism for a reproduction they planned to craft from hand. Upon examination of the inner workings of the gun, they discovered that the main spring was unlike any previously encountered, it was a flat main spring, not a "V" spring, as we are most familiar with. Upon closer examination, it was discovered that the spring was not original to the gun. It was a crudely shaped spring that bore traces of crosshatch marks that indicated that it had been made from a farrier's file!!!

Could John Shields, the expedition's farrier and blacksmith, have made this field repair on June 10, 1805 as described in the journals?

ACKNOWLEDGEMENT

The author also thanks the following for their encouragement, assistance, and generosity in making this presentation and display possible: Dr. and Mrs. Robert D. Beeman, Michael Carrick, Ernest Cowan, Jeffery H. Johnston, Richard H. Keller, and J. William LaRue.

Figures 1, 2, 11, 12, 13, and 14 courtesey of Dr. Robert Beeman. ©2005, used with permission. See also www.beemans.net.

REFERENCES

Ambrose, Stephen E. *Undaunted Courage—Meriwether Lewis, Thomas Jefferson, and the Opening of the American West.* (Simon & Schuster, New York, New York, 1996).

Beeman, Dr. Robert D. *New Evidence Points to the Lewis*

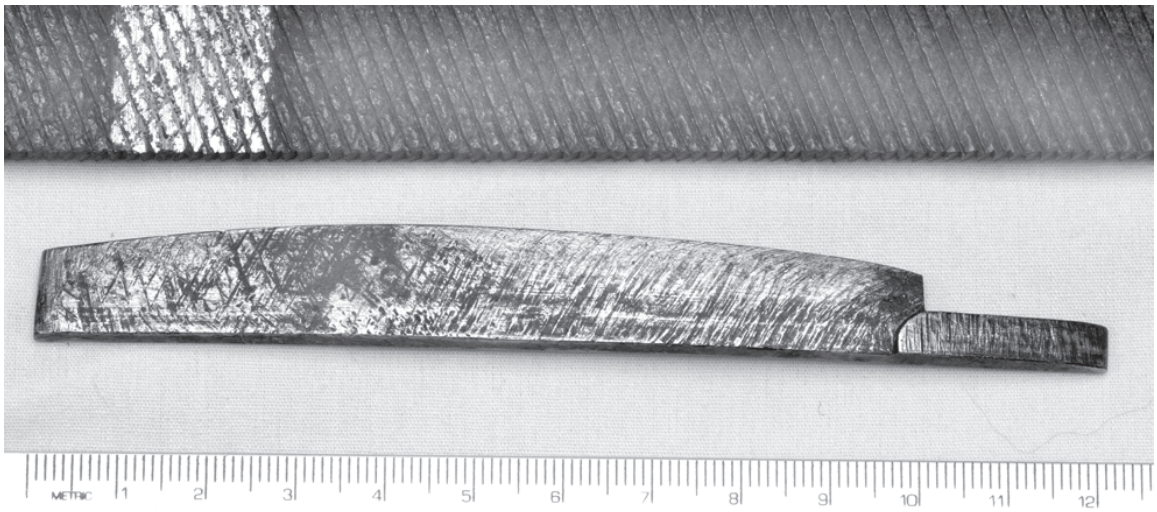


Figure 14. Girardoni Air Rifle, replaced main spring (bottom) and period ferrier's file (top) Matches description of repair effected by John Sheilds.

& Clark Air Rifle—an "Assault Rifle" 1803. (Unpublished manuscript. As found on www.beemans.net, update of March 13, 2006).

Carrick, Michael. *Meriwether Lewis's Air Gun.* (From *We Proceeded On*, Journal of the Lewis & Clark Heritage Trail Foundation, November 2002.), Pg 15.

Carrick, Michael. *Meriwether Lewis' Repeating Air Gun.* (*Gun Report,* January 2003), Pg 28–36.

Harrison, G. Charter, Jr. *The Lewis & Clark Air Gun* (*Gun Report*, May 1956), Pg 6.

Harrison, G. Charter, Jr. *Re-Inquiry Into the Lewis & Clark Air Gun* (*Gun Report*, November 1957), Pg 14.

Keller, Richard H. *The Repeating Air Rifle of the Lewis & Clark Expedition.* (Unpublished manuscript, April 2006).

Moulton, Gary E., ed., *The Journals of the Lewis & Clark Expedition,* 13 vols. (Lincoln: University of Nebraska Press, 1983–2001).

Rodney, Thomas. *Book of Accounts of Thomas Rodney Commencing at Dover in the State of Delaware, August 1803.* (Manuscript Division, Library of Congress, Washington, D.C.).

Smith, W. H. B. *Smith's Standard Encyclopedia of Gas, Air, & Spring Guns of the World* (Castle Books, New York, 1957).

Stewart, Henry M. *The American Air Gun School of 1800–1830.* (Bulletin of the American Society of Arms Collectors, #35).

FOOTNOTES

1. *All That Jazz,* "Everything Old Is New Again" Written by Peter Allen and Carole Bayer Sager. Performed by Peter Allen, Irving Music, Inc./Woolnough Music, Inc. (BMI)/New York Times Music Corp. (BMI), 1979.

2. Moulton, Gary E., ed., *The Journals of the Lewis & Clark Expedition. August 30, 1803.* 13 Vols. (Lincoln, NE, University of Nebraska Press, 1983–2001).

3. Moulton, *June 10, 1805.*

4. Ibid.

5. Harrison, G. Charter Jr. *Re-Inquiry Into the Lewis & Clark Air Gun, The Gun Report.* November 1957.

6. Harrison, G. Charter Jr. *The Lewis & Clark Air Gun, The Gun Report.* May 1956.

7. Moulton, *footnote #5 August 30, 1803.*

8. Carrick, Michael. *Meriwether Lewis's Air Gun. We Proceeded On, Journal of the Lewis & Clark Heritage Trail Foundation,* November 2002.

9. Moulton, *September 8, 1803.*

10. Rodney, Thomas. *Book of Accounts of Thomas Rodney Commencing at Dover in the State of Delaware, August 1803.* Manuscript Division, Library of Congress, Washington, D.C.

11. Smith, W.H.B. *Smith's Standard Encyclopedia of Gas, Air, & Spring Guns of the World.* Pg. 25. Castle Books, New York, 1957.

12. Ibid, *Pg. 28.*

13. Stewart, Henry M. *The American Air Gun School of 1800–1830.* Bulletin of the American Society of Arms Collectors, #35.

14. Ambrose, Stephen E. *Undaunted Courage—Meriwether Lewis, Thomas Jefferson, and the Opening of the American West.* Pg. 170. Simon & Schuster, New York, New York, 1996.

15. Moulton, *September 25, 1804.*

16. Ambrose, *Pg. 170.*

17. Moulton, *September 25, 1804.*

18. Ibid.

19. Ibid, *August 17, 1805.*

EXHIBIT CARRICK-5

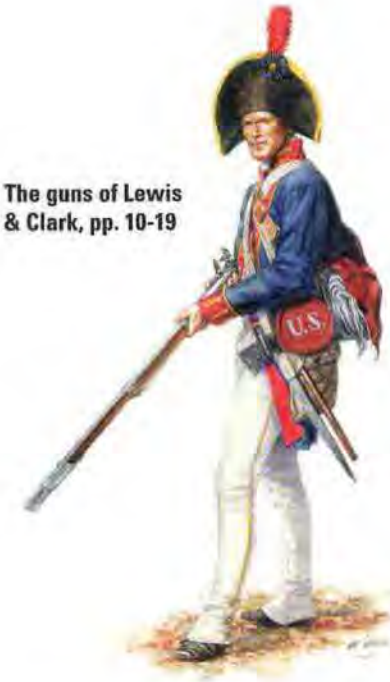
LCTHF's conservation origins — Dye and Hebard biographies — short rifle and airgun

We Proceeded On

Lewis and Clark Trail Heritage Foundation / www.lewisandclark.org May 2006 Volume 32, No. 2

WHACK! CRACK! BOOM!
THE GUNS OF LEWIS & CLARK

Contents



The guns of Lewis & Clark, pp. 10-19

The short rifle, pp. 20-28

Conservation roots, pp. 38-40

On the cover

Warren Lee's painting *Air Power Diplomacy* depicts Meriwether Lewis's demonstration of the expedition's air rifle at a meeting with the Yankton Sioux on August, 30, 1804. The air rifle was a repeater, and Lewis's ability to shoot it several times without apparently reloading astonished the assembled Sioux, some of whom rushed to the target tree to examine the bullet holes. Lewis's "wonder weapon" is the subject of Robert Beeman's article beginning on page 29. The two other features in this issue also address the captains' formidable arsenal: Stuart Wier's "The Guns of Lewis and Clark" (pages 10-19) and Richard Keller and Ernest Cowan's "The Short Rifle of Lewis and Clark" (pages 20-28). Prints of Lee's painting (commissioned by Robert David Beeman; © 2005) are available in both full-size (22 by 26 inches) and half-size on www.beemans.net.

We Proceeded On

May 2006 • Volume 32, Number 2

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E. G. Chuinard, M.D., *Founder*
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Editor
J. I. Merritt
51 N. Main Street
Pennington, NJ 08534
609-818-0168
wpo@lewisandclark.org

Volunteer Proofreaders
H. Carl Camp
Jerry Garrett

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Lewis's longitude readings

Your Biographical Brief profiling Robert Patterson in the February 2006 WPO was most interesting. I am especially grateful for your last paragraph concerning Ferdinand Hassler's failed efforts to use Meriwether Lewis's observations to obtain longitudes. The article's last sentence—"Several years ago, when a physicist entered Lewis's numbers into a computer program based on the Patterson-Ellicott method, 20 of Lewis's 23 observations proved correct to within half a degree."—is especially significant. If true, this certainly explains Hassler's difficulty in carrying out the work Lewis asked him to do.

I have read that Hassler tried to obtain the original data from Nicholas Biddle on the assumption that the "fair copy" furnished to him may have been inaccurate. He received no response from Biddle.

I would appreciate it if you could provide a reference for a paper about the physicist's work.

ROBERT J. BOYLE, JR.
Lewiston, Id.

EDITOR'S NOTE: See Richard S. Preston, "The Accuracy of the Astronomical Observations of Lewis and Clark," *Proceedings of the American Philosophical Society*, June 2000, pp. 168-191. The paper can be accessed on the Web at www.aps-pub.com/proceedings. htm. A discussion of Preston's paper appears on page 11 of the November 2001 WPO.

The last paragraph of your biographical sketch of Robert Patterson touches on a widely accepted explanation of Ferdinand Hassler's difficulty with Lewis and Clark's astronomical observations. It's a neat, satisfying explanation, one that we can't help wishing were true. Unfortunately it can't be.

As you correctly say, Lewis's observations were turned over to Hassler who, 10 years later, "gave up in despair." But then follows the modern explanation for the failure: "It turns out that Hassler was unfamiliar with the valid, if unorthodox, observational method that Patterson and Ellicott had taught Lewis."

That supposedly unorthodox method was the use of calculated altitudes (in place of measured ones) in clearing a lunar distance. This was, in fact, a perfectly orthodox alternative, and had been known to navigators for some forty years. It was in Maskelyne's *Requisite Tables*, as well as in the four most used and respected navigation manuals of the time. That Hassler could have been unfamiliar with it is outside the realm of reasonable belief.

My guess is, Hassler's problems with Lewis and Clark's observations were aggravated by the copy of the journals he was given. It seems reasonable to suppose it was hastily done and loaded with miscopied numbers. He complained of being unable to get his hands on a second copy for comparison. With nothing to work with but the often erroneous numbers set down for the observations, and for the courses and distances, it's not surprising he eventually despaired of producing a geographically accurate map.

Researchers today have two great advantages in getting past bad numbers and missing information. One is that they have a good idea where observations were taken. The other is that editor Gary Moulton has put different versions of the journals at their fingertips.

Lewis and Clark seemed to take a distinct interest in nautical astronomy, and they did surprisingly well, considering Lewis's brief instruction and the stresses and distractions of the journey. They'd have done a superb job if they'd had the guidance of written advice tailored to the needs of the expedition. The "Astronomical Notebook" Patterson prepared for Lewis didn't fill this bill. Whatever Patterson's virtues as a teacher and mathematician, his "Notebook" is amazingly out of touch with the orders Jefferson gave Lewis and the challenges the captains faced.

BRUCE STARK
Eugene, Ore.

Your article about Robert Patterson and his value to the expedition was so very interesting. It is also encouraging to learn how good a job Lewis did in making his celestial observations, especially in view of all the character assassination to which

he's been subjected. It's so nice at last to read something good about him.

By now you have probably picked up on what I assume is a typographical error in the article, which gives Patterson's year of birth as 1783. Going by the other dates in the article, I believe he must have been born in 1743.

EVEDENE BENNETT
Albany, Ore.

EDITOR'S NOTE: You are correct in stating that Patterson was born in 1743 (the same year of birth as Thomas Jefferson's).

Fort Mandan winter temperature

My thanks for two great articles in the November 2005 WPO: "O! How Horriable is the Day," by Terrence R. Nathan, and "Forecast: Variable," by Vernon Preston, which speak to the trying weather conditions faced by the Corps of Discovery. Because both authors are professional meteorologists, I present the following minor points with some trepidation.

I believe that the widely reported low temperature of minus 45 degrees Fahrenheit at Fort Mandan (recorded December 17, 1804) should be noted with a caveat because the fusion point of mercury is minus 38 degrees, and it is unlikely that any of Lewis and Clark's thermometers would be calibrated to this extreme. Today, mercury thermometers are just not used for such very low temperatures.

Mercury does contract slightly when it solidifies, and to a lesser extent the solid continues to contract as temperatures drop below minus 38. Therefore, the captains' thermometer would not have been damaged by the severe cold, so they would have had no reason to question their accuracy. Furthermore, when the temperature was in the neighborhood of minus 45 degrees (and in reality it may very well have been lower), who in their right mind would have dawdled over the measurement?

We should present the captains' temperatures as they reported them, but the potential for error should also be noted. In the same vein, the reference found in Nathan's article to the deviation from the expected boiling point of water states that the barometric pressure wasn't noted simultaneously so that appropriate corrections could be applied. I was impressed,

Letters (cont.)

though, that Lewis thought to check his instrument—an example of good laboratory practice.

This is but nit-picking. I commend WPO and the authors for these pieces.

GRAEME BAKER
Libby, Mont.

Honoring the expedition in Missouri

An article in the November 2005 WPO states that the Missouri State Society of the Daughters of the American Revolution received the LCTHF's Meritorious Achievement Award for marking 14 gravesites of members of the Lewis and Clark Expedition. This is incorrect. We have marked 14 recognized sites of importance to the expedition, including the gravesites of expedition members George Shannon and Robert Frazier.

Since the award was presented we have also honored George Drouillard, the expedition's chief hunter and interpreter. His home was in Cape Girardeau, where he raised horses and lived with his uncle, Louis Lorimier, commandant of the Cape Girardeau District.

This April 2, in New Haven, Missouri, the DAR placed a plaque recognizing John Colter, the expedition member turned mountain man, who is well known for his many adventures in the western wilderness. According to a fourth great-grandson, Timothy Forrest Colter, John Colter built a home on Little Boeuf Creek and died in La Charrette in 1812. Research by another of his descendants, the late Ruth Colter Frick, found he was buried near New Haven on private land.

One of the objects of the DAR is to preserve and protect the history of our great country, and one of the most inspiring events in that history is the Lewis and Clark Expedition. It is an honor to tell this story and to have our efforts recognized by the Lewis and Clark Trail Heritage Foundation.

JANE SHORT MALLINSON
Missouri DAR State Trails Chairman
Sugar Creek, Mo.

WPO welcomes letters. We may edit them for length, accuracy, clarity, and civility. Send them to us c/o Editor, WPO, 51 N. Main St., Pennington, NJ 08534 (e-mail: wpo@lewisandclark.org).

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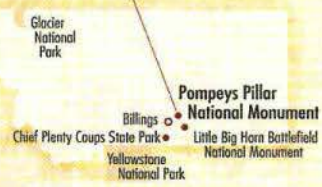

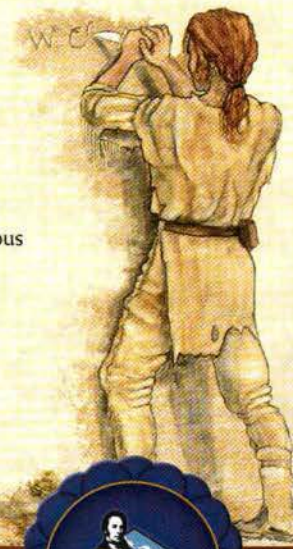

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President's Message

New challenges as L&C Bicentennial winds down

Though she lives only forty miles from me, I had not met Patti Thomsen until the 1998 annual meeting, in Great Falls. We became better acquainted when, later that year, Patti joined the foundation's new Badger State chapter, which my wife and I had helped to found. In time I came to appreciate the depth of Patti's knowledge of the foundation's history and the breadth of her friendships among its members.

So as she effectively took office soon after the annual meeting in Portland last August, I looked forward to a year when I could keep a low profile while supporting Patti and learning from her, just as I had learned the previous three years from Gordon Julich, Ron Laycock, and Larry Epstein. With studious application and good fortune, I might be prepared to do justice to the office by October of 2006.

But as they say, the best-laid schemes of mice and men often go astray. At least mine do. I remember exactly where I was and what I was doing the morning of January 5, when Carol Bronson, the foundation's executive director, called to suggest that I check my e-mail (something I was not very good about in those days). Patti had resigned, she wrote, "effective immediately," due to non-life-threatening health issues "which make this decision absolutely necessary." Anyone who knows Patti and her commitment to the foundation knew instantly that this was quite serious and truly "necessary."

I am pleased to report that Patti is recovering reasonably well, but she was not able to attend our April board meeting. While having no thoughts about resuming her duties, she emphasizes that she misses all of us. The board has asked me to serve as president through the balance of her term, and I have agreed to do that. We all hope to see Patti in St. Louis come September. You can write her, meanwhile, at P.O. Box 47, Hartland, WI 53029-0047.

You can also take comfort in the knowledge that we have a superb professional staff at our headquarters in Great Falls. It has never been as strong as it is now. Indeed, before her illness Patti and I had talked about our intent to have the board gradually withdraw several degrees to encourage more leadership at the staff level. That still is my resolve.

There remains, nonetheless, ample challenge for the board and its 15 member-based committees. These are daunting times for the foundation as the bicentennial draws to a close and the likelihood of significant public funding wanes. Membership seems to me particularly important—both retaining our veterans and attracting new people, and that in turn requires superior service.

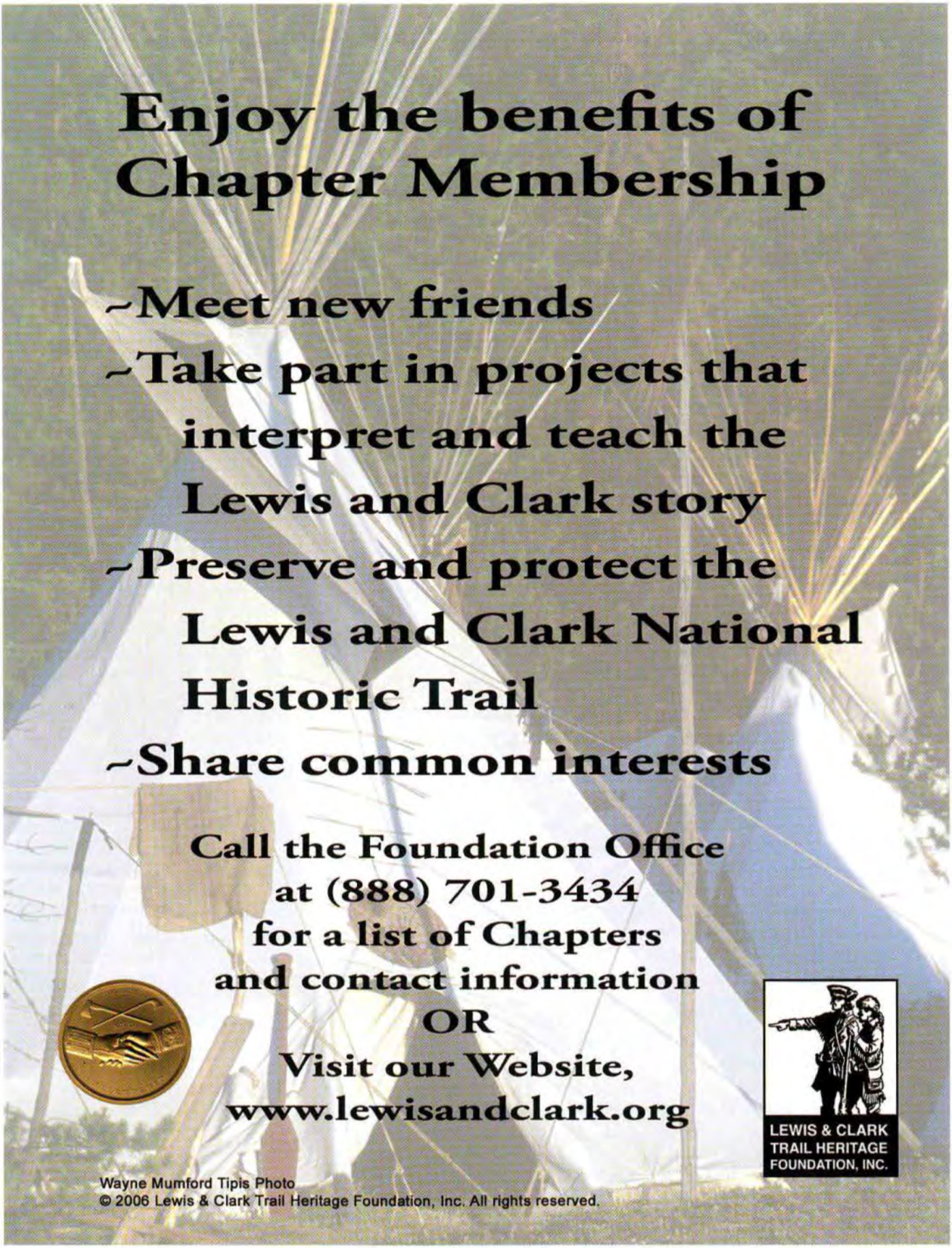
Trail stewardship a priority

During the past year Wendy Raney, Gordon Julich, and Carol Bronson have been especially articulate in making the case for our increased commitment to the Lewis and Clark National Historic Trail. Several chapters and many individual members are leading in this effort as well. If we do not take care of the trail, who will?

Finances are of perhaps greater concern that ever before. The support we have enjoyed from government agencies during the bicentennial has enabled us to grow and implement new programs. We now must make the transition to financial independence.

Membership, trail, and financial security are sharply in focus, but at the same time we must all continue to have fun. Come celebrate with us in St. Louis at our annual meeting September 18 and 19 and stay for the bicentennial commemoration that follows.

—Jim Gramentine
President, LCTHF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Past, present, and future connected through the tree of life

In the words of Thomas Fuller, a 17th-century physician, "He that plants trees loves others beside himself." This horticultural version of the Golden Rule is sorely needed at a time when our natural environment is in peril and whole acres of forests are disappearing at record speeds. I have long been engaged in issues of environmental sustainability, but my involvement with the Lewis and Clark Bicentennial has brought these issues ever closer to home as I have developed relationships with members of Indian tribes encountered by Lewis and Clark.

The two centuries since the Corps of Discovery set out from St. Louis have given us the privileged perspective of hindsight. The west of Lewis and Clark was not empty—it was a settled land with long cultural traditions established by native peoples who had lived there for thousands of years. How have we impacted the land as we settled and exploited it? And how have the plants and animals noted by the corps fared? What would we do differently now?

I would hope that we would plant trees. We did exactly that two years ago during the Three Flags Lewis and Clark National Heritage Signature Event, in St. Louis. Now, as we near the end of the bicentennial and the closing signature event, in September in St. Louis, I find myself reflecting upon such salient moments of the three-year-long commemoration.

The memory of that event is uppermost in my mind as winter's chill thaws to welcome another spring. In March of 2004, members of the Osage nation came to St. Louis to commemorate the bicentennial in their own way. When Lewis and Clark departed from St. Louis, the Osages controlled much of the trade in the Missouri Valley. This was before their banishment from the St. Louis area by American settlers. By the time of William Clark's death, in 1838, the Osages had been completely removed from their homeland. Two centuries later, at the grand opening of Lewis and Clark: The National Bicentennial Exhibition, the mayor of St. Louis proclaimed January 17 as Osage Homecoming Day. The Osages were officially welcomed home, although they can never truly return to the home they once knew.

Yet, despite the grievous injury inflicted upon the Osages, they have hope in a future embodied within the land. It was in that spirit that a tree-planting and branch-tethering ceremony was conducted in St. Louis's Forest Park. Artists Karen McCoy and Matthew Dehaemers worked with tribal members to re-root, if you will, and ultimately to honor, the ancient Osage presence in this region.

As the artists explained, "When Chief Jim Gray told us about the Indian use of marker trees as guides to special places, paths, or water, it marked a turning point in our process. It seemed that the symbolic use of a living, growing tree, adapted for special guiding purposes, would be the ideal metaphor for our work."

Preparing the tree

The site centers on a red oak with a large, hollow trunk. The plan was to use as much of the old tree as possible, similar to the way the Osages used every part of the animals they hunted. The large limbs and branches of the old oak were charred, thereby sending some of the tree's substance skyward. Within the tree's vast trunk, a young Osage orange tree was planted. One low-growing branch was drawn through a slot cut in the east side of the trunk. This branch was manipulated and tethered in the old way of the Osages so that it forms a marking arm directing our gaze toward the east. The Osages consider that they are always traveling in an easterly direction on their life paths.

That day, we gathered around the massive oak as the branch was bent back and tied down toward the east. An Osage elder said a prayer, followed by singing and drumming. Eddie Red Eagle spoke in Osage and then translated his words into English. He mentioned the tragedies that have befallen the Osages in the two hundred years since Lewis and Clark, while also emphasizing the need to "move forward."

"Just for this moment," he said, "let's declare this land to be Osage. We promise to take good care of it in this moment and then we will give it back to you. You will take care of it and then we will come back and take care of it and then give it back." Eddie Red Eagle's call to pretend that the land that we stood upon was once again Osage was his way of forcing us to acknowledge our relationship to one another. As he ended his brief remarks, I stood beneath the towering oak awestruck by the simple and haunting nature of his words. "You belong to us and we belong to you," he said.

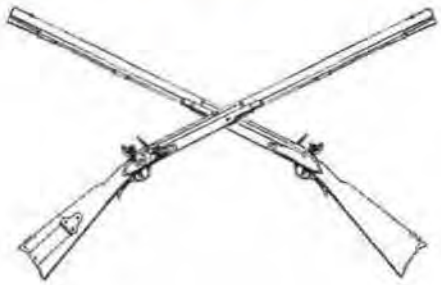
The more I think of life, the more I think we are headed not to the future but to the past, where our ancestors are. The future comes behind us, not after us. If we behaved as if we belonged to one another in the immediate present, to those in the ancient past, and to those in the distant future, how different would this world be? There is an old Greek saying that comes to mind: "A civilization flourishes when people plant trees under whose shade they will never sit."

Upcoming signature events

Mark your calendars for June 14-17, for *Among the Nimipuu (The Nez Perce)*, in Lewiston, Idaho, and July 22-25, *Clark on the Yellowstone*, at Pompeys Pillar and in Billings, Montana. For more information on these two signature events, please visit www.lewisandclark200.org.

—Robert R. Archibald
President, Bicentennial Council

The GUNS of LEWIS & CLARK



The Corps of Discovery's formidable arsenal was a veritable traveling exhibit of the era's firearms technology

BY STUART WIER

Firearms were essential to the Lewis and Clark Expedition. In the hands of its skilled hunters they provided meat for a party of more than thirty people who spent 28 months in the field, living mostly off the land. They were also critical for defense and for collecting specimens of birds and mammals.

The explorers carried "short rifles" acquired by Meriwether Lewis at the federal armory at Harpers Ferry, Virginia, and army service muskets brought by soldiers recruited from other military units. The Corps of Discovery's arsenal included a pair of blunderbusses, a swivel cannon, and personal weapons such as Lewis's famous airgun and an "elegant fusee" owned by his co-commander, William Clark. With the exception of the airgun, all these weapons were muzzle-loading, single-shot, black-powder guns with flintlock ignitions.

To the frustration of weapons historians, none of the expedition's journalists described their guns in any detail—firearms were everyday possessions on the frontier, scarcely worthy of mention. The only expedition guns that may have survived to the present are a Harpers Ferry short rifle, an air rifle, and a rifle that once belonged to Clark, but arguments that any of these are actual relics of the expedition rely on inference rather than documented provenance. Our knowledge of Lewis and Clark's weapons is based on the briefest of journal entries and other incomplete and often ambiguous primary sources. Many questions remain. Still, much has been learned in recent years, and today we are able to make more positive statements about the explorers' guns than were possible even a decade ago.

MUSKETS

A musket is a smoothbore weapon: the interior, or bore, of the barrel is smooth. By contrast, a rifle's bore is cut with spiral grooves to make the ball spin, giving it greater accuracy. But a musket loads faster, an advantage in battle, and can fire either a single ball or multiple birdshot or buckshot, like a modern shotgun.

An artilleryman of the Lewis and Clark era stands at the ready with a Model 1795 Charleville pattern musket. The Model 1795 was standard issue in both the artillery and infantry corps. (The Corps of Discovery included one artilleryman, Alexander Willard, in the permanent party and five others—John Dunne or Dame, John Robinson or Robertson, John Thompson, Ebenezer Tuttle, and Isaac White—in the larger group that wintered at Fort Mandan. William Clark was an artillery officer.)

MICHAEL HAYNES

Model 1795 Charleville pattern musket

Reproduction of the Model 1792 Harpers Ferry rifle with truncated barrel and sling, one candidate for the expedition's "short rifle."

The Model 1803 Harpers Ferry rifle, another candidate for the short rifle. The expedition probably carried the very similar Model 1800.

This 36-caliber rifle in the collection of the Missouri Historical Society may have been the "small" rifle carried by William Clark on the expedition.

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In 1803 the flintlock musket was the army's main firearm. One was issued to every soldier. Lewis's pre-expedition list of needed equipment did not include muskets because the soldiers he expected to recruit at forts on the Ohio River would already have them. Among the articles delivered to Lewis at Harpers Ferry were 125 musket flints and "15 Cartouch Box Belts."[1] A cartouche was a tube of paper, twisted shut at either end, which held ball and powder for a single shot. It facilitated loading because the soldier could simply bite off one end of the cartouche, dump the contents into the muzzle, and ram it home, rather than loading and ramming the powder and ball separately. Each soldier made up a supply of cartouches which he carried in a box on his belt.

Lewis's recruits were equipped with Charleville pattern muskets, so named because they were patterned on a French musket known as the Charleville Model 1763; the American version is also known as the Model 1795. Between 80,000 and 85,000 of these weapons were manufactured at the federal armory in Springfield, Massachusetts, from 1795 to 1814 and at Harpers Ferry beginning in 1801. Its .69-caliber barrel was 44 ½ inches long.[2] When Lewis was planning the expedition he intended to provide accouterments for 15 muskets and 15 rifles. Lewis also intended to recruit 15 soldiers, so we can assume that he probably expected each soldier to be equipped with both a musket and a rifle. Because the complement of enlisted men grew, there were probably at least as many Charleville muskets on the expedition as Harpers Ferry rifles.[3] Although we tend to think of the explorers hunting with rifles, they often used muskets, which were accurate enough at shorter ranges.

Some of the French *engagés* recruited for the expedition (mainly to man the boats as far as the Mandan villages) surely owned their own trade muskets. Often called the trade gun or North West gun (after the British-Canadian fur company), the trade musket in its basic form was a .60-caliber weapon with an overall length of 50 inches. Distinctive features included a brass butt plate, a side plate in the form of a curling serpent, and an oversized trigger guard that enabled a person wearing mittens to fire it.[4] The expedition journals often refer to the trade musket as a "fusee," a rough phonetic rendering of *fusil*, the French word for a light musket.

The Mysterious "Short Rifle"

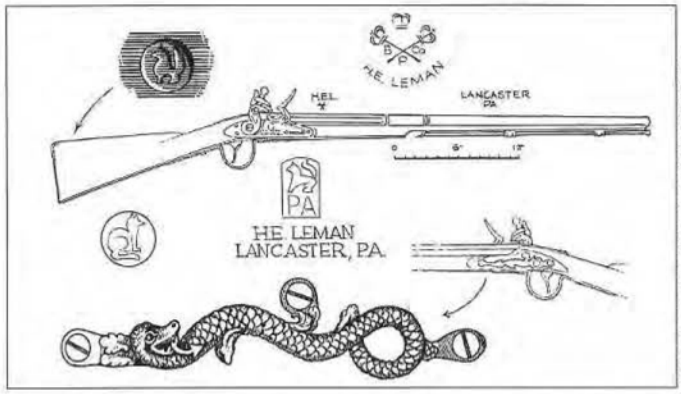
Lewis and Clark scholars have long debated the identity of the expedition's "short rifle," as it was sometimes called

in the journals. Fifteen of these weapons were ordered by Lewis at Harpers Ferry. For many years it was assumed these were the Model 1803, a rifle manufactured at the armory in the early years of the 19th century.[5] This view changed with the publication, in 1999, of an article by Frank A. Tait in *Men at Arms*, the journal of the National Rifle Association. Pointing out that government records failed to show the manufacture of Model 1803s at Harpers Ferry until 1804, Tait argued that Lewis's rifles were instead modified versions of an earlier rifle, the Model 1792-94 contract rifle, so-called because it was made by Pennsylvania gunsmiths under government contracts issued in 1792 and 1794. (For purposes of this article we will call it simply the Model 1792.) It was a full-stocked flintlock with a 42-inch octagonal barrel firing a .49 caliber ball.

A Harpers Ferry inventory conducted in 1801 showed 382 rifles in storage there, most of them Model 1792s. In Tait's scenario, these rifles were modified to suit the expedition's needs. Alterations would have included new locks and swivels for slings. The bores may also have been drilled out to accommodate a larger ball, the rifling "freshened," or recut, and the 42-inch barrels shortened—although by how much is uncertain.[6] American rifles of the time typically had barrels 40 to 48 inches long, so any rifle with a barrel much shorter than 40 inches would have been "short."[7] Given its handiness for anyone hunting in rough terrain or traveling in a small boat, Lewis must have regarded a short rifle as a better match for the conditions he expected to face.

The expedition journals include several references to "short rifles." On April 12, 1806, as the party was proceeding up the Columbia River past numerous Indian villages, Lewis wrote, "we caused all the men who had short rifles to carry them, in order to be prepared for the natives should they make any attempts to rob or injure them." Three months later, on August 11, when Pierre Cruzatte accidentally shot Lewis in the buttocks while hunting, the captain coolly noted how "the ball had lodged in my breeches which I knew to be the ball of the short rifles."[8] Lewis evidently recognized the ball by its atypically large size.

Recently, Tait's conclusion that the short rifle was a cut-down Model 1792 has been challenged by a new theory put forward by firearms historians Richard Keller and Ernest Cowan. They propose that design and prototype work on a short rifle with a 33-inch barrel began at Harpers Ferry as early as 1800 and was more or less completed by Lewis's arrival there in March 1803. This rifle, which they call the Model 1800, would have served as a pattern



FROM CARL P. RUSSELL, *FIREARMS, TRAPS AND TOOLS OF THE MOUNTAIN MEN* (UNIVERSITY OF NEW MEXICO PRESS, 1981).

The North West trade musket was probably carried by the French-Canadian *engagés* who accompanied the expedition. Distinctive features included a brass sideplate in the form of a serpent.

for the 15 rifles Lewis ordered. Their thesis rests in part on the discovery of a Harpers Ferry short rifle dating from 1803 with a serial number of 15—a possible candidate, they believe, for one of the expedition's 15 Harpers Ferry rifles. [Keller and Cowan make their case in an article on pages 20-28.]

Other expedition rifles

Frontiersmen recruited for the expedition, including George Drouillard and the so-called Nine Young Men from Kentucky, may have brought their own firearms. A frontiersman's weapon of choice was the Pennsylvania rifle. This was the common "long" rifle and one of the most famous weapons in American history. It was made by gunsmiths in eastern Pennsylvania and adjacent states. Its caliber ranged from .35 to .50 inches and its overall length from 57 to more than 60 inches.[9]

Clark carried a gun he referred to as the "Small rifle" and at least once as the "Little rifle," as if to distinguish it from the expedition's larger-caliber short rifles and Pennsylvania rifles. He noted that the balls fired by the small rifle were 100 to the pound, which means they were .36 caliber
(not much larger than a pea, and one eighth the weight of a round fired by the Charleville musket).[10] Such a small-caliber rifle was light and easy to carry, which may explain Clark's preference for it over the heftier muskets and expedition rifles.

A .36-caliber rifle that belonged to Clark is now owned by the Missouri Historical Society. This rifle is 53 ½ inches long, with a barrel length of 37 ½ inches. It has a silver patch box and is highly ornamented, which is typical of Pennsylvania-style rifles made after 1790. It was made by John Small of Vincennes, Indiana. Both the caliber and the maker's name raise the possibility that this surviving

An officer's fusil, or smoothbore sporting gun, similar to Clark's "eligant fusee."

An 18th-century fowling piece, a type of long-barrelled shotgun of the sort carried by Lewis.

A Girandoni repeating air rifle like this one was almost certainly the type of airgun used on the expedition. The example shown here has a removable leather sleeve covering its buttstock air reservoir.

PHOTO CREDITS, FROM TOP: JIM CHAMBERS; FLINTLOCKS LTD.; STUART WEIR, STUART WEIR

gun was the'"small" rifle Clark carried on the expedition, but its comparative lack of wear suggests Clark may have purchased it after the expedition.[11]

Clark's "fusee" and Lewis's fowling piece

Clark also took on the journey a weapon he called his "eligant fusee." By "fusee" he meant fusil, which as noted is a French term for a smoothbore musket. In this context it refers to a gentleman's sporting gun—a light-weight, ornamented smoothbore for hunting birds and small game. Such guns often had brightly polished barrels, were decorated with engraved brass or silver fittings and inlays, and in general showed finer workmanship than military and trade muskets. Fusils were usually English guns of 20 gauge (.625 caliber) and overall lengths between 52 and 55 inches. Fittings might include a butt plate and side plate engraved with hunting or martial scenes, a trigger guard with acorn finial, an engraved thumb piece or escutcheon plate, and checkering on the wrists. They were indeed elegant. Clark appears to have lost his fusil in a flash flood at the Great Falls of the Missouri.[12]

Lewis also had a fowling piece on the expedition. This was a smoothbore long gun, not so elegant as a gentleman's fusil, and with a barrel of unusual length—some fowlers were more than six feet long. They were used primarily with small shot for hunting birds and small game, and we can assume this was Lewis's primary weapon for collecting smaller natural-history specimens. After the expedition's return, Lewis submitted several requests for reimbursement of personal expenses. One of these listed items traded with Indians: "One Uniform Laced Coat, one silver Epaulet, ... one pistol, one fowling piece, all private property, given in exchange for canoe, horses, &c."[13]

Lewis's amazing airgun

The most remarkable gun of the expedition was Lewis's personal air rifle.[14] Smokeless, quiet, and probably able to shoot multiple times without reloading, it was frequently used to impress Indians. Clark reported that it "Surprised and astonished the nativs."[15] Lewis wrote that he purchased his airgun in 1803, but he did not say where. The journals are silent on what it looked like or how it worked.

Until recently, most writers on the subject believed the airgun was made by Isaiah Lukens of Philadelphia or possibly by his father, Seneca Lukens.[16] Key support for this view is an 1846 auctioneer's pamphlet of items in the sale of Isaiah Lukens's estate. The list includes several airguns, including one "used by Messrs Lewis & Clark in their exploring expeditions. *A great curiosity.*" The pamphlet does not say the gun was made by Lukens, although another item on the list is described as being "of his own construction." The airgun was withdrawn from the sale and lost to view, at least for a time.

Isaiah Lukens was born in 1779 and apprenticed with his father, a craftsman and machinist. In addition to airguns he made clocks, watches, and scientific instruments (an example of his handiwork is the clock in Independence

Hall). He was a founder of the Franklin Institute and a member of the American Philosophical Society.[17]

There are six known surviving Lukens airguns. One of these, in the museum of the Virginia Military Institute, was long the leading candidate for the expedition airgun. It shows signs of repairs to its main spring, front sight, hammer, and a lock screw consistent with a journal account of repairs made to Lewis's airgun. The V.M.I. gun has a .31-caliber barrel that is 32 inches long. It loads from the muzzle, like conventional rifles of the period.

Dates are lacking for surviving Lukens airguns, but available evidence suggests they were made after the expedition.[18] This, of course, argues against the possibility that Lewis carried a Lukens gun. Another possibility is that he carried an innovative repeating air rifle made by Bartolemeo Girandoni, an Italian gunsmith based in Vienna. Girandoni designed and manufactured airguns for the Austrian army, which by 1800 had some 1,500 of them in inventory. Other European gunsmiths made airguns based on his novel design, and several hundred Girandoni guns acquired by the Austrian army were lost in battle, so there were probably many Girandoni or Girandoni-type guns circulating in Europe before 1803. It is reasonable to suppose that some of these may have reached the United States.[19]

The typical Girandoni-style airgun is 48 inches long, with a caliber of .46-.51 inches and a magazine holding 20-30 balls, depending on the model. The magazine is a tube attached to the barrel. The entire butt is a welded steel tube that serves as a reservoir for pressurized air (it is filled by a pump). Loading a round involves working a spring-loaded horizontal bar that passes through the breech and magazine. Pushing this loading bar moves a ball from the magazine into an opening in the bar and then into the breech. Cocking the hammer and then pulling the trigger releases a burst of air from the reservoir, propelling the ball. All this takes at most a few seconds.

A Girandoni is a repeater: balls are stored in a magazine and loaded from the breech. Twenty shots can be fired with one charge of air by simply working the loading bar, cocking the hammer, and pulling the trigger. This is a huge advantage over a Lukens airgun, which, as noted, like other weapons of its day was loaded from the muzzle and had to be reloaded after every firing.

Although no expedition member described the airgun, two other observers left accounts of it. Thomas Rodney, a judge traveling to Mississippi Territory, visited with Lewis on September 7, 1803, in Wheeling, Virginia, and recorded the day in his journal. Lewis, just a week into

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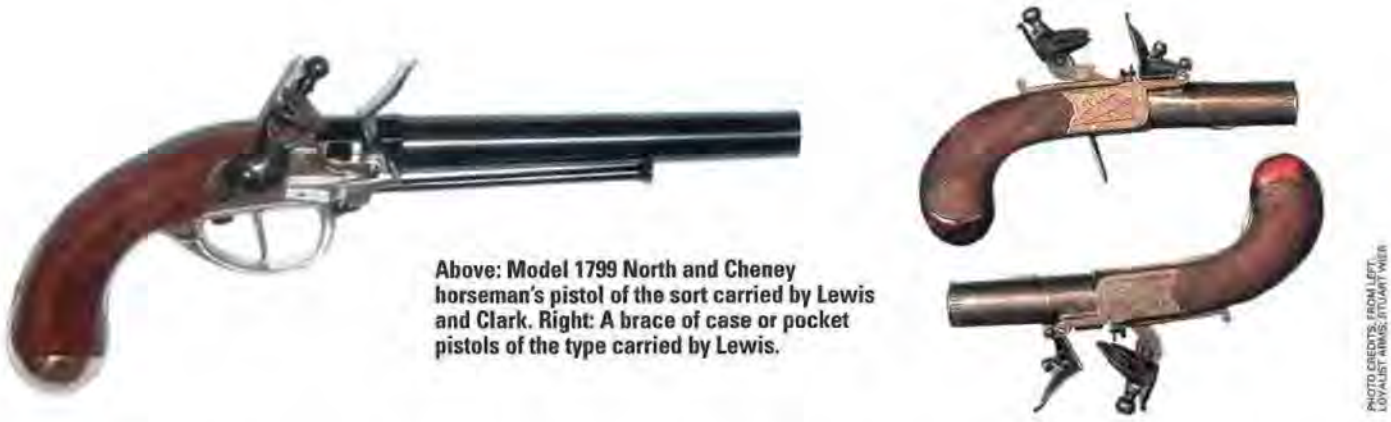
William Clark's "small" rifle is shown in this Michael Haynes portrait of the captain taking a reading from his circumferentor, a type of surveyor's compass used on the expedition.

his trip down the Ohio to rendezvous with Clark, showed the airgun to Rodney and shot it several times in his presence. Rodney wrote,

> when in perfect order she fires 22 times in a minute. All the balls are put at once into a short side barrel and are then dropped into the chamber of the gun one at a time by moving a spring; and when the trigger is pulled just so much air escapes out of the air bag which forms the britch of the gun as serves for one ball. It is a curious piece of workmanship not easily described.[20]

Rodney appears to be describing a Girandoni. His reference to a "short side barrel" (i.e., magazine) is particularly telling, along with the rapid rate of fire—a single-shot Lukens gun could never have fired 22 rounds a minute.[21]

One other account indicates that the expedition airgun was probably a repeater. Charles McKenzie, a clerk for the North West Company, was visitng the Hidatsa vil-



Above: Model 1799 North and Cheney horseman's pistol of the sort carried by Lewis and Clark. Right: A brace of case or pocket pistols of the type carried by Lewis.

PHOTO CREDITS: FROM LEFT, LOYALIST ARMS; STUART WEIR

lages in the winter of 1804-05, when the expedition was wintering nearby. McKenzie witnessed a demonstration of the airgun which he later described. "The Indians," he said, "admired the air gun as it could discharge forty shots out of one load."[22] One can interpret this statement two ways—that the gun was a repeater, or that it could shoot 40 times on one charge of air in the reservoir. No existing Girandoni airgun has a magazine capable of holding 40 rounds, but an error may have crept into McKenzie's account, which was probably written at least six years after the fact.[23] If we accept the first interpretation, then the Rodney and McKenzie accounts are both consistent with the attributes of a Girandoni-style gun and inconsistent with those of surviving airguns made by Lukens or his associates.[24]

[For more on the Girandoni air rifle, see the article on pages 29-35 by Robert Beeman, who believes a Girandoni repeater in his collection was the one Meriwethr Lewis carried on the expedition.]

Pistols

We know that Lewis took several types of handguns on the expedition. In May 1803 he requisitioned "1 P[air] Horsemans Pistols" from the Schuylkill arsenal, in Philadelphia.[25] The arsenal stocked two makes of handguns, the "North and Cheney" pistol and the "McCormick-style" pistol.

The North and Cheney was made by a Berlin, Connecticut, firm owned by gunsmith Simeon North and his brother-in-law, Elisha Cheney. They fulfilled a 1799 government contract to make a pistol now generally known as the Model 1799. North and Cheney produced 500 of them.[26] The Model 1799 was based on the French Model 1777 pistol, also called the Charleville or St. Etienne pistol, an unusual design with a brass frame and wood used only for the grips. The American version was 14 ½ inches long, with a .69-caliber barrel of 8 ½ inches, one inch longer than the French pistol.

The McCormick pistols were assembled by Robert McCormick from parts supplied by storekeepers at the Schuylkill arsenal. Two have survived to the present day. They are 16 ½ inches long, with .65- and .67-caliber bores. The arsenal may also have stocked other types of horseman's pistols, including the French Charleville.

Each captain carried one of the horseman's pistols on the expedition. Clark traded his, along with balls, powder, and a knife, for a horse when the explorers were camped with the Shoshones.[27] Lewis hung on to his. It served him well on the morning of July 27, 1806, during his exploration of the upper Marias River, when he awoke to a scuffle between his men and some young Blackfeet Indians sharing their campsite. Lewis quickly found that one of the Blackfeet had stolen his rifle, but his pistol was handy. Brandishing the pistol, he chased after the thief and shot him in the belly. (Lewis shot him with the rifle, which he recovered after the Indian dropped it.)[28]

Lewis also carried among his personal articles a pair of gentlemen's "case pistols," so named because they were often kept in a velvet-lined case. On April 29, 1806, while camped with the Nez Perces, he included one of these pistols among "sundry articles" traded for a horse.[29] Lewis asked the government to reimburse him for the pistol in the same letter requesting reimbursement for the fowling piece.[30]

While in Philadelphia, Lewis purchased a pair of pocket pistols.[31] These small-caliber concealed weapons were often just four or five inches long and fit easily into a pocket. Also called a screw-barrel pistol or box-lock pistol, a pocket pistol was readied for firing by unscrewing the barrel from the box-shaped lock and loading powder and ball into a chamber in the lock. A small wrench was used to tighten the barrel after it was rescrewed into the lock. Lewis's pocket pistols had "secret" triggers that folded out of sight into the handle and swung into place when the hammer was cocked. Although there is no mention of

A swivel gun like this one (above) was mounted on the expedition's keelboat, while each of the two pirogues was armed with a blunderbuss (below). Both weapons were typically filled with grapeshot for repelling boarders.

PHOTO CREDITS: FROM TOP, STUART WIER; NEUMAN AND KRAVIC, 1978.

pocket pistols in the expedition journals, it seems likely that Lewis would have brought them along.

The swivel gun and blunderbusses

Last but by no means least, the expedition's arsenal included a swivel gun and two blunderbusses.

A swivel gun was a small version of the 18th-century naval cannon. Usually cast in iron but occasionally in bronze, it was about 30 inches long and had a caliber of nearly 2 inches. It swiveled on a Y-shaped yoke that dropped into a hole in the rail of a boat or the wall of a fortification. Swivel guns could fire a single solid ball but were usually loaded with a handful of shot or musket balls and employed as a kind of extra-large shotgun to repel attackers.

Blunderbusses were short, heavy, smoothbore shoulder arms used for defense. They were usually mounted on a pivot in the rail of a boat or the top of a wall. The muzzle was flared for rapid loading.

When the expedition was headed up the Missouri in 1804, the swivel gun was mounted in the bow of the keelboat and the blunderbusses were on the two pirogues. They came into play during the explorers' confrontations with the Teton Sioux on September 25 and 28. On the first occasion, on Lewis's orders the men loaded the swivel gun with 16 musket balls and the blunderbusses with buckshot.[32] On the second occasion, warriors seized the keelboat's cable. Clark was ready to blast them with the swivel gun when a chief defused the situation by jerking away the cable.[33] That winter, the swivel gun and blunderbusses were apparently mounted on the walls of Fort Mandan.

Returning to the Hidatsa villages on August 14, 1806, Clark wrote, "we directed the blunderbusses be fired several times"—a peaceful salute to the Indians who had befriended them during the winter of 1804-05.[34] The swivel gun was presented to the Hidatsa chief One Eye with an admonition by Clark to heed the words of the captains and to remember those words whenever the gun was fired.[35] Again in salute, the blunderbusses sounded for the last time upon the explorers' arrival in St. Charles, Missouri, a month later. As Clark recorded in his journal entry for September 21, "we saluted the Village by three rounds from our blunderbuts and the Small arms of the party, and landed near the lower part of the town. we were met by great numbers of the inhabitants."[36]

Two days later, according to Clark, when the explorers arrived in St. Louis, "we Suffered the party to fire off their

pieces as a Salute to the Town." The expedition was over. Traveling across an unknown wilderness, remote from familiar sources of aid and supply, the Corps of Discovery depended on guns for survival. The Harpers Ferry rifles, Charleville pattern muskets, trade muskets, the blunderbusses and swivel cannon, Clark's "little rifle" and "eligant fusee," and Lewis's airgun, fowling piece, and pistols collectively amounted to a traveling exhibition of the firearms technology of their day. Some were more important than others to the expedition's well being, but all contributed in one way or another to its ultimate success.

Foundation member Stuart Wier is an independent scientist, historian, and speaker based in Boulder, Colorado. He specializes in the 18th- and 19th-century exploration of America.

NOTES

[1] Donald Jackson, ed., *Letters of the Lewis and Clark Expedition with Related Documents, 1783-1854*, 2 volumes (Urbana: University of Illinois Press, 1978), Vol. 1, p. 98.

[2] Robert M. Reilly, *United States Martial Flintlocks* (Lincoln, R.I.: Andrew Mowbray, 1987), pp. 51-54.

[3] At least 30 enlisted men, including sergeants, made the first leg of the journey, to the Mandan and Hidatsa villages. The Corps of Discovery's 33-person "permanent" party (those who went on to the Pacific) comprised 24 privates, three sergeants, the two captains, and four civilians—the hunter/interpreter George Drouillard; the interpreter Toussaint Charbonneau; Carbonneau's wife, Sacagawea; and their infant, Jean Baptiste. As noted later in the text, not everyone recruited on the Ohio was drawn from other army units; as civilians, the so-called Nine Young Men from Kentucky would not have possessed army muskets. They may have brought long rifles with them.

[4] Charles E. Hanson, *The Northwest Gun* (Lincoln: Nebraska State Historical Society, 1955).

[5] Carl P. Russell, *Firearms, Traps, & Tools of the Mountain Men* (Albuquerque: University of New Mexico Press, 1967), p. 37.

[6] Frank A. Tait, "The U.S. Contract Rifle Pattern of 1792," *Men at Arms*, May-June 1999, pp. 33-45. Frank A. Tait, "Response to the letter of Michael H. Maggelet," *Men at Arms*, November-December 1999, pp. 7-8.

[7] Lewis and Clark's short rifle had several European antecedents, including the German Jaeger rifle, versions of which had barrels as short as 28 inches. It was widely used in the American Revolution by the Hessian Jaeger Corps and other German units. George D. Moller, *American Military Shoulder Arms*, 2 volumes (Niwot: University Press of Colorado, 1993), Vol. 1, p. 449.

[8] Gary E. Moulton, ed., *The Journals of the Lewis and Clark Expedition*, 13 volumes (Lincoln: University of Nebraska Press, 1983-2001), Vol. 7, p. 111 and Vol. 8, p. 155. John Ordway refers to the short rifle in his entry for June 18, 1806, found in Vol. 9, p. 324.

[9] For more on the Pennsylvania rifle, see Henry J. Kauffman, *The Pennsylvania-Kentucky Rifle* (New York: Bonanza Books, 1960); Joe Kindig, Jr., *Thoughts on the Kentucky Rifle in Its Golden Age* (York, Penn.: George Shumway, 1960); and Merrill Lindsay, *The Kentucky Rifle* (New York: Arma Press, 1972). "Pennsylvania rifle" and "Kentucky rifle" are often used interchangeably, but there is no evidence that the latter term was in use at the time of the expedition. Its source may be a popular song, "The Hunters of Kentucky," written by S. Woodworth and W. Blondell in 1815, after the Battle of New Orleans. (Lindsay, p. 1.)

[10] Moulton, Vol. 6, p. 121. Michael F. Carrick, "William Clark's 'Small' Rifle," *Muzzle Blasts*, November 2003, p. 37. Early in the journey, Clark wrote that he used the "Little rifle for all my hunting." That was before he fired four times at an elk without bringing it down.

[11] Carolyn Gilman, *Lewis and Clark Across the Divide* (Washington: Smithsonian Books, 2003), p. 356. Because Clark often capitalized the letter "s" at the beginning of a noun, the idea that he was referring to the gun by its maker is debatable.

[12] On June 29, 1805, Clark, Toussaint Charbonneau, Sacagawea, and her baby were in a ravine during a downpour, just upstream of the highest waterfall on the Missouri River, and were nearly swept away in a flash flood. In his journal that evening, Clark described the incident and his loss of an "eligant fusee" and other equipment. Lewis, however, wrote that it was Charbonneau, not Clark, who "lost his gun" in the flood, and made no mention of a fusil. Lewis did not learn of the incident until two days later, when Clark and his party reached the Upper Portage Camp. Richard Whitehouse, who was also at the upper camp with Lewis, wrote in his journal, "Capt. Clark lost the large Compass a fusiee pouch & horn." John Ordway was with Clark the evening after the flood. His journal entry, which mainly copies Clark's, states that Clark lost "an elegant fusee." So whose gun was lost actually remains something of a mystery. We should probably accept Clark's version, since his entry offers the only firsthand account. If the lost gun was Charbonneau's it may have been a fancier version of the common trade fusil.

A fusil belonging to Clark surfaces again in his journal entry for August 30, 1805, when the explorers were bartering with the Shoshones for horses: "finding that we Could purchase no more horse than we had for our goods &c. ... I gave my Fusee to one of the men & sold his musket for a horse." This might have been his "eligant fusee" (assuming it wasn't lost at the Great Falls) or a simple trade fusil, but exchanging a trade gun for the better-quality Charleville pattern musket (assuming that was what the man had) seems unlikely.

[13] Jackson, Vol. 2, p. 428.

[14] Journal entries invariably refer to the "air gun," not "air rifle," but in fact it was almost certainly a rifle. For journal references, see 1803: August 30; 1804: August 3, August 20, October 10, October 27, October 29; 1805: January 16, June 9, June 10, August 7, August 17; 1806: January 24, April 3, May 11, and August 11.

[15] Moulton, Vol. 3, p. 209. Entry for October 29, 1804.

[16] Charter Harrison Jr., "The Lewis and Clark Air Gun," *The Gun Report*, May 1956, pp. 6 and 34-35; Charter Harrison Jr., "More on the Lewis and Clark Air Gun," *The Gun Report*, June 1956, p. 28; Henry Stewart, Jr., "The American Air Gun School of 1800-1830," *Monthly Bugle* (Pennsylvania Antique Gun Collectors Association), No. 89, (1977), pp. 2-7; Roy M. Chatters, "The Not So Enigmatic Lewis and Clark Air Gun," *We Proceeded On*, May 1977, pp. 4-7; Ashley Halsey, Jr., "The Air Gun of Lewis and Clark," *American Rifleman*, August 1984, pp. 36-

37 and 81-82; Robert D. Beeman, "Proceeding On to the Lewis & Clark Airgun,"in Robert D. Beeman and John B. Allen, *Blue Book of Airguns* (Minneapolis: Blue Book Publication, 2002), pp. 50-77.

[17] Brooks Palmer, *The Book of American Clocks* (New York: MacMillan, 1950), p. 235; George H. Eckhardt, *Pennsylvania Clocks and Clockmakers* (New York: Devin-Adair, 1955), pp. 183-184; James B. Whisker, *Pennsylvania Clockmakers and Watchmakers* (Lampeter, Wales: Edwin Mellen Press, 1996), p. 164.

[18] Michael F. Carrick, personal communication, which reads in part, "Lukens moved to Philadelphia (from working in his father's shop in Horsham, PA) in 1811. The first listing I could find in the Philadelphia business directories was in 1813 as a 'turner' (of lathes). ... Lukens is in the business directories until 1830. ... I have looked at all I could find in Philadelphia libraries. A companion of Lukens wrote in 1822 that 'Lukens was chiefly engaged in making town clocks, but found time, with never more than the assistance of one or two men, to finish two or three small lathes and an air gun or two in the course of a year, for which there were always ready purchasers.' Lukens was primarily a clockmaker, a maker of small lathes (of a style he invented), and a machinist."

[19] Michael F. Carrick, "Meriwether Lewis's Air Gun," *We Proceeded On*, November 2002, pp. 13-19; Michael F. Carrick, "Meriwether Lewis' Repeating Air Gun," *The Gun Report*, January 2003, pp. 28-36; Michael F. Carrick, "More"on Lewis's Air Gun," *We Proceeded On*, May 2004, pp. 2-3; Joseph Mussulman, "Capt. Lewis's Medicine Gun," http://www.lewis-clark.org/content/content-channel.asp?ChannelID=249, 2004.

[20] Dwight L. Smith and Ray Swick, eds., *A Journey through the West: Thomas Rodney's 1803 Journal from Delaware to the Mississippi Territory* (Athens: Ohio University Press, 1997), p. 50.

[21] Rodney's statement that the gun fired 22 rounds a minute is not in exact accord with a Girandoni's 20-round capacity, but a longer magazine would have accommodated 22 or more rounds.

[22] W. Raymond Wood and Thomas D. Thiessen, *Early Fur Trade on the Northern Plains: Canadian Traders Among the Mandan and Hidatsa Indians, 1738-1818* (Norman: University of Oklahoma Press, 1985), p. 232.

[23] Ibid., pp. 223 and 227, states that McKenzie's "accounts were apparently written about 1809-1810" and that the surviving manuscript is apparently not in McKenzie's hand but was transcribed from the original by another person.

[24] There is at least one scenario in which all the records could agree. Perhaps Lukens obtained the expedition airgun after Lewis's death—he clearly had an interest in airguns—and it was a Girandoni-style air rifle. Forty years later it appeared in his estate. A Girandoni-style airgun could perhaps hold 40 rounds if it were outfitted with a longer magazine.

[25] Jackson, Vol. 1, p. 97.

[26] Samuel E. Smith and Edwin W. Bitter, *Historic Pistols: The American Martial Flintlock 1760-1845* (New York: Scalamandre, 1985), p. 123; Reilly, p. 168. A later contract for 1,500 pistols of the same model was completed and the guns were received in September 1802 at a government storeroom in New Haven, Connecticut. The pistols made on the second contract were probably not available to Lewis in Philadelphia. The first 500 contract pistols were stamped S. NORTH & E. CHENEY BERLIN in a curve on the underside of the brass frame near the trigger, and US was stamped on top of the barrel at the breech. Serial numbers are marked internally. Fewer than 10 pistols of this contract are known to survive.

[27] Moulton, Vol. 5, p. 178. Clark's entry for August 29, 1805, states in part, "I purchased a horse for which I gave my Pistol 100 Balls Powder & a Knife."

[28] Moulton, Vol. 8, p. 134. Lewis's journal entry reads in part, "I jumped up and asked what was the matter which I quickly learned when I saw drewyer [George Drouillard] in a scuffle with the indian for his gun. I reached to seize my gun but found her gone, I then drew a pistol from my holster." Case pistols were also the weapon of choice for duels. Early in his army career, Lewis challenged a superior officer to a duel. Fortunately, the duel never took place. One wonders if the pistols Lewis planned to use were the same ones he took on the expedition.

[29] Moulton, Vol. 7, p. 183.

[30] Jackson, Vol. 2, p. 428.

[31] Ibid., Vol. 1, p. 91. Lewis purchased "1 Pair Pocket Pistols, Secret Triggers" for $10 from Robert Barnhill, 63 North Second Street in Philadelphia, on May 21st, 1803.

[32] Moulton, Vol. 9, p. 68. John Ordway wrote, "Capt. Lewis who was on board ordered every man to his arms. the large swivel loaded immediately with 16 Musquet balls in it the two other Swivels loaded well with Buck Shot, Each of them manned."

[33] Ibid., Vol. 3, p. 124.

[34] Ibid., Vol. 8, p. 298.

[35] Ibid., p. 304.

[36] Ibid., p. 369.

Bayonet-mounted Model 1795 muskets are stacked to form a tripod. Hanging from the guns are cartouche boxes and bayonet sheaths.

MICHAEL HAYNES

The SHORT RIFLE of LEWIS & CLARK

A recently discovered "Model 1800" may well be one of the weapons made for Meriwether Lewis at Harpers Ferry

BY RICHARD KELLER AND ERNEST COWAN

Perhaps the key firearm in the arsenal of the Corps of Discovery was a military rifle made at the federal armory at Harpers Ferry, Virginia. In their journals Meriwether Lewis, William Clark, and other members of the expedition called it "the short rifle." For many years, it was assumed this term referred to the Model 1803 Harpers Ferry rifle. The problem with this assumption is that, according to existing records, the 15 rifles manufactured for Lewis at Harpers Ferry were completed between March and July of 1803, at least six months before the Model 1803 went into production there. More recently, some historians of the expedition have argued that the "short rifle" was a modified version of an earlier rifle stockpiled at Harpers Ferry, the Model 1792.

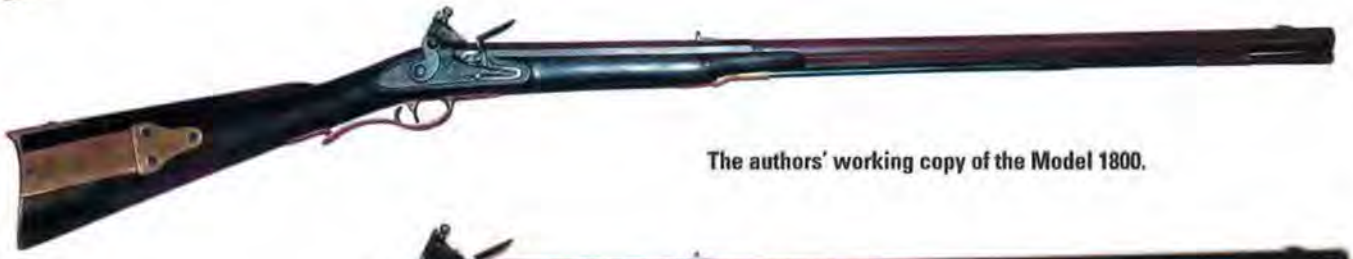
In fact, the short rifles carried on the expedition were almost certainly based on a design developed over several years at Harpers Ferry, starting in 1800. The "Model 1800," as we shall call it, may never have gone into large-scale production, although prototypes of it were probably built by the skilled gunsmiths working at the armory under the careful eye of its superintendent, Joseph Perkin. We say "almost certainly" and "probably" because many Harpers Ferry production records—including, presumably, any records concerning a Model 1800—were destroyed when Confederate troops torched the armory in 1861. The existence of a Model 1800 final prototype—a so-called "pattern gun" that served as the model for actual production rifles—must therefore be inferred from other sources.

While differing in a number of details, in its overall configuration the Model 1800 would have resembled the Model 1803 so closely that to a casual observer they would appear virtually identical. Both models were on the cutting edge of rifle design and technology for their time.

The Model 1803 was indeed a "short rifle," with a barrel length of 33 inches, versus 42 inches for the Model 1792, which was essentially a military version of the Pennsylvania long rifle. It was a "half-stock" rifle, meaning that its stock extended only halfway to the muzzle, as opposed to the full-stock Model 1792. It also had a larger bore than the Model 1792 (.53 caliber versus .50 caliber) and was far more powerful, firing a .52-caliber ball with about twice the muzzle velocity of the Model 1792. More than four thousand Model 1803s were manufactured at Harpers Ferry between 1803 and 1807. Each gun's lockplate bore the year of manufacture, and the serial number was stamped on the barrel.[1]

Evidence to support the theory that the expedition's "short rifles" were based on either a late prototype or pattern-gun Model 1800 surfaced in 2004, when we learned of the existence of a rifle that, while differing in some details, had the same dimensions and general features as the Model 1803. The rifle is owned by Leon Budginas, a collector in Salt Lake City who had purchased it from a man who had acquired it thirty years earlier from a St. Louis antiques shop. Budginas lent us the rifle so we could build a replica based on it. It is an extraordinary find. The rifle's lockplate is marked with the year 1803, and its serial num-

The "Salt Lake City" Model 1800, serial number 15.



The authors' working copy of the Model 1800.

A Model 1803 Harpers Ferry rifle.

ber is 15—the lowest by far of any existing rifle with an 1803 lockplate. Differences in details between this rifle and higher-numbered Harpers Ferry rifles with 1803 lockplates lead us to believe that its manufacture predates production of the Model 1803. In other words, it is a Model 1800 made sometime in the first 11 months of 1803. Although its provenance remains conjectural, it is tempting to believe this rifle may be the last of the 15 made for the Lewis and Clark Expedition.

Lewis at Harpers Ferry

Meriwether Lewis arrived at Harpers Ferry on March 16, 1803, bearing a one-sentence letter from Secretary of War Henry Dearborn instructing Perkin to provide him with whatever arms he needed: "You will be pleased to make such arms & Iron work, as requested by the Bearer Captain Meriwether Lewis and to have them completed with the least possible delay."[2]

Lewis, who remained at Harpers Ferry until April 14, had come to the right place for his rifles. Established in 1798, the Harpers Ferry armory, like the federal armory in Springfield, Massachusetts, was a major center for firearms research and development. As noted, although official records are silent about the existence of the Model 1800, there is strong circumstantial evidence that such a weapon was developed at Harpers Ferry under Perkin's guidance. In 1799, in response to concerns about a pending war with France, Congress authorized an increase in the regular army that included a regiment and battalion of riflemen. More than 1,800 rifles were needed to equip this force—far more than the number of Model 1792 rifles in the army's inventory. Moreover, the Model 1792 was obsolete. Supplying the required number of weapons meant designing and manufacturing a new rifle. The War Department expended more than $11,000 in 1800 on arms manufacture, and we can assume that some of these funds went toward development of the Model 1800.[3]

France and the U.S. soon patched up their differences, and with war no longer on the immediate horizon, Congress eliminated the rifle regiment and battalion it had authorized. But at least as a back-burner project, the development of a new rifle at Harpers Ferry must have continued for several years, even while it armorers focused on the main business at the time, the manufacture of muskets.[4] In a letter dated May 25, 1803, Dearborn asked the Harpers Ferry armory to produce "a suitable number of judiciously constructed Rifles ... at least two thousand."[5] The following year, Dearborn increased his order to 4,000 rifles.[6]

Dearborn's letter bristles with specifics about the kind of firearm he had in mind:

> The Barrels of theµs should not exceed two feet nine inches in length [i.e., 33 inches] and should be calculated for carrying a ball of one thirtieth of a pound weight—the barrels should be round from the muzzle to within ten inches of the Britch [breech], and not of an unnecessary thickness especially in the round part—the stock should not extend further than the tail pipe[;] from thence to within three

> inches of the muzzle, an Iron rib should be substituted for that part of the stock—the ramrod should be of Steel and sufficiently strong for forcing down the ball without binding—the but[t] end of the ramrod should be concaved suited to the shape of the Ball—the locks should be light and well executed—the mounting should be brass. ... I have such convincing proof of the advantage the short rifle has over the long ones (commonly used) in actual service as to leave no doubt in my mind of preferring the short rifle, with larger Calibers than the long ones usually have & with stiff Steel ramrods instead of wooden ones—the great facility which such rifles afford in charging, in addition to their being less [liable] to become foul by firing, gives a decided advantage to men of equal skill and dextirity over those armed with the common long rifle.[7]

Dearborn was a bureaucrat, not a rifle designer, so what immediately becomes apparent from the letter's wealth of detail is that he was describing an existing rifle, perhaps one sent to him by Perkin for examination. Although there is no surviving correspondence, it is also possible that Lewis wrote to him about the rifle during his stay at Harpers Ferry or shortly thereafter.[8] Whatever the source of the "convincing proof" of the short rifle's superior qualities, it is evident that a late prototype or pattern gun had been built and tested by the time Lewis left Harpers Ferry in April and that work had begun on his 15 rifles, which were based on it. As he wrote to Jefferson on April 20 from Lancaster, Pennsylvania, "My Rifles, Tomahawks & knives are preparing at Harper's Ferry, and are already in a state of forwardness that leaves me little doubt of their being in readiness in due time."[9] Lewis returned to Harpers Ferry on July 6 for a brief visit. On July 8 he wrote to Jefferson, "Yesterday I shot my guns and examined the several articles which have been manufactured for me at this place; they appear to be well executed."[10]

Even if we disregard the possibility that Dearborn had a prototype in hand by May of 1803, there is no doubt that he did so later that year. On December 2, he wrote Perkin a letter specifying changes to the Model 1800 rifle that would create what we now know as the Model 1803. The letter states in part,

> The ironed ribed Rifle in my opinion is an excellent patter [pattern gun], with the following very trifling alterations. (Viz) the upper end of the upper thimble should be a little Bell muzzled to receive the introduction of the ramrod more conveniently—the apperture or cut in the sight near the Breech should be a little wider and a Brass ferrule placed on the end of the Stock near the tail pipe, to prevent that part of the Stock from splitting.[11]

Top two photos: Detail of breech end of Salt Lake City gun showing its serial number, 15; lockplate of Salt Lake City gun showing year of manufacture, 1803. Bottom two photos: Same details on a Model 1803 Harpers Ferry rifle, serial number 318, manufactured in late 1803.

Note that Dearborn is explicitly talking about a final prototype or pattern ("patter") gun.[12]

Published sources on existing Model 1803s do not always mention serial numbers, but our research shows there are many rifles in collectors' hands bearing 1803 lockplates and serial numbers ranging from the 300s through the 700s. In our view, this conclusively demonstrates that the Harpers Ferry armory produced hundreds of short rifles in 1803, far more than the 15 ordered by Lewis. Our guess (and in the absence of further documentation that is all it

can be) is that Lewis's short rifles were completed by May 25, when Dearborn wrote Perkin placing his initial order for 2,000 rifles, and that production on this early version of the short rifle continued until receipt of Dearborn's letter of December 2 calling for modifications. Rifles made before receipt of that letter should be classified Model 1800s, while those made afterward—rifles that would have incorporated Dearborn's requested changes—should be classified Model 1803s. (It should be noted that the designation of early U.S. military weapons as "models" based on the year they were ordered is a 20th-century convention for the benefit of firearms historians and collectors. To Dearborn, the Model 1800 and Model 1803 were simply "the short rifle," as distinguished from "the long rifle," a.k.a. the Model 1792.)

JIM MERRITT

Authors Richard Keller, left, and Ernest Cowan prepare to shoot their Model 1800 copy.

Locks and Burst Barrels

Among the novel features of the expedition's short rifle was a lightweight lock made with interchangeable parts. (A lock is the rifle's firing mechanism, consisting of the hammer, priming pan, frizzen, and other components.) Lewis also ordered extra locks and lock parts for his 15 rifles. To facilitate repairs in the field, all the expedition's locks and lock components were interchangeable. Dearborn's letter of May 25 makes no mention of the need for interchangeability, so we can be certain it was something Lewis insisted on. This feature—unique for firearms of the period—is another example of Lewis's careful preparation for an extended wilderness journey.

The Corps of Discovery's chief gunsmith, John Shields, used the extra locks and parts of locks many times to keep the rifles in working order. On March 20, 1806, as the expedition was readying to leave Fort Clatsop, Lewis noted,

> The guns of Drewyer and Sergt. Pryor were both out of order. the first was repared with a new lock, the old one having become unfit for uce; the second had the cock screw broken which was replaced by a duplicate which had been made prepared for the lock at Harpers ferry where she was manufactured. but for the precaution taken in bringing on those extra locks, and parts of locks, in addition to the ingenuity of John Shields, most of our guns would at this moment be entirely unfit for use; but fortunately for us I have it in my power here to record that they are all in good order.[13]

Shields was also kept busy by a propensity of the short rifle's barrel to burst—an unfortunate trait the Model 1800 seems to have shared with the closely related Model 1803. In early July of 1806, when the explorers were encamped with the Nez Perce Indians on the homeward-bound journey, Shields repaired two short rifles that had burst at the muzzle.[14] It is interesting to note that the barrels of three rifles carried on Zebulon Pike's exploration of the upper Arkansas River in 1806-07 also burst; historians believe the Pike expedition was probably equipped with Model 1803s.[15] The Model 1803 used a finer-grained powder than the Model 1792. Because it burns faster, finer powder is more explosive and generates higher pressures, which propel the ball at greater speed. One weapons historian estimates that the short rifle had a muzzle velocity (the speed of the ball as it leaves the barrel) of 2,000 feet per second,[16] about twice that of a typical long rifle. The high pressures put tremendous strain on the barrel, and even a partial blockage at the muzzle—a bit of dirt, mud, or even snow—could cause it to burst.

The Model 1803's shorter barrel demanded the use of finer powder. Finer (faster-burning) powder assured that the charge would be completely expended by the time the ball exited the muzzle—after that, any powder still burning was effectively wasted. This was a concern because good rifle powder was expensive (all the best stuff was imported).[17] Finer powder also burned cleaner and was therefore less inclined to build up residue in the bore,

which could lead to fouling—an advantage noted by Dearborn in his letter of May 25. Lewis's pre-expedition inventory lists 50 pounds of "best rifle Powder" acquired at Harpers Ferry and 123 pounds of comparable "English Cannister Powder" purchased in Philadelphia.[18]

The Salt Lake City rifle

The rifle owned by Leon Budginas, the collector in Salt Lake City—the one stamped with serial number 15, our candidate for a Model 1800—shows extremely hard use and some major modifications over the years. At some point its firing mechanism was converted from flintlock to percussion, and the barrel was rebored to remove the rifling. (This wasn't unusual. Repeated firing wore down rifling, reducing accuracy and range. Reboring—in effect, converting the gun to a musket—was one "solution" to this problem. A musket was accurate enough at ranges up to 70 yards or so. It was easier to load, less subject to fouling, and more versatile because it could be loaded with either a single ball or multiple buckshot or birdshot.) The muzzle has been truncated, shortening the barrel length to 32 ¼ inches. The stock shows crude restoration attempts. The patchbox has been removed and its mortise covered with a piece of wood nailed in place. Sun patterns carved in the stock are inlaid with pine resin that has long since hardened into a glasslike substance. This primitive frontier motif suggests the gun might have belonged to a trapper who headed to the Rockies in the years after Lewis and Clark. The Corps of Discovery's weapons and other equipment were sold at auction in St. Louis following the expedition's return, and it is easy to imagine some of its rifles winding up in the hands of mountain men.

The rifle shares a number of similarities with early production versions of the Model 1803—features that, with some important exceptions, match the specifications laid out by Dearborn in his letter of May 25, 1803. As noted, it is the same length (less the three-quarters of an inch trimmed from the muzzle), and is half-stocked. The barrel is round for most of its length but octagonally shaped for the last 10 inches near the breech. A longitudinal piece of iron known as a rib is soldered to the underside of the barrel. Brazing joints on the rib indicate the location of three ramrod thimbles, short sections of steel tubing that hold the ramrod. The brass rear thimble, or "tail pipe," as Dearborn called it, is mortised into the forward end of the stock.

Along with the similarities there are some differences supporting our view that this is not a Model 1803 production rifle but a Model 1800. In his letter of December 2, 1803, Dearborn specified that the upper or front thimble

KELLER & COWAN

Top photo: Muzzle end of a Model 1803 with front thimble slightly flared to receive the ramrod. Middle and bottom photos: Muzzle end of Salt Lake City gun with straight front thimble. Thimbles are brazed to the rib, which is soldered to the barrel.

should be "a little Bell muzzled" (i.e., should flare slightly) "to receive the introduction of the ramrod more conveniently." The front thimble on early production Model 1803s are indeed flared, as Dearborn requested, but the one on the Salt Lake City gun is straight, pointing to a pre-December production date.

In other differences, the location of the center thimble is two inches farther forward on the rib. The rib is of three-piece hollow construction, not the solid-forged rib found on the Model 1803. The butt plate is two pieces of brass brazed together rather than a single piece of cast brass. (The multipiece construction of the rib and butt plate is consistent with a protoype weapon, while cast components are in keeping with a production version.) The front sight is of German silver instead of brass. The Salt Lake City gun has a raised, buckhorn-style rear sight rather than a notched flat sight. The name "buckhorn" derives not from the sight's material—it is made of iron—but from its distinctive U-shaped profile, recalling the antlers of a buck deer. (It was designed for shooting in low light.) The sight is marked with the same batch mark (four closely spaced slashes) as the rifle's other components, indicating it was fitted at Harpers Ferry and not added later.

The question of rifle slings

Conspicuously absent from the Salt Lake City gun are swivels for attaching a rifle sling. Nor is there evidence that swivels were once part of the weapon. Historians have

Shooting the Model 1800 short rifle and Girandoni repeating airgun

There may be no one on earth with a more intimate knowledge of the Lewis and Clark short rifle and airgun than Ernie Cowan. That's because Cowan, a remarkably skilled and largely self-taught gunsmith in Chambersburg, Pennsylvania, builds working copies of these weapons.

His copies are based on a meticulous examination of the originals. His model for the short rifle was a gun made at Harpers Ferry in 1803—the "Salt Lake City rifle" discussed in the main text. His airgun is based on a Girandoni air rifle with repairs that point to a previous ownership by Meriwether Lewis. (See related story, pages 29-34.)

In late March I drove to Chambersburg from my home in New Jersey to meet Cowan and his partner and collaborator, Rick Keller. I wanted to have a firsthand look at the copies and to shoot them if possible. As a bonus, Keller told me on the phone that they also had the original Harpers Ferry rifle on loan from the owner, so I could examine that as well.

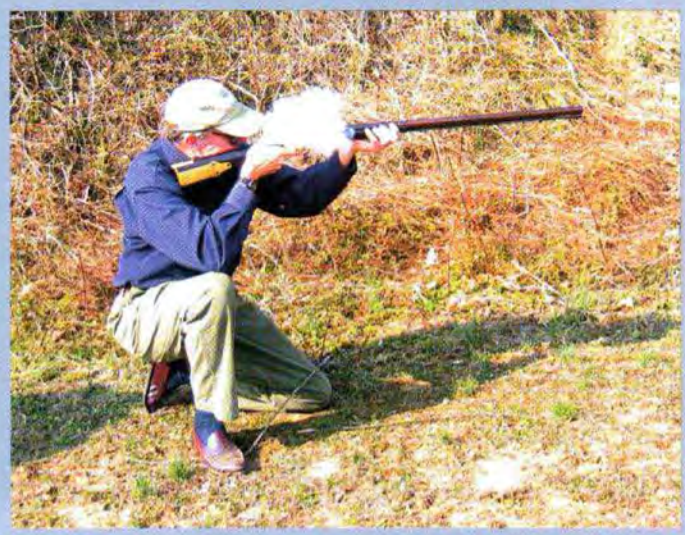
Cowan's rambling shop is in the basement of an old warehouse whose main floors are devoted to Keller's company, Great War Militaria, which sells World War I memorabilia to collectors and reenactors. The shop is filled with tools for forging, cutting, grinding, and machining—Cowan makes virtually all of a gun's components from raw materials, whether iron, bronze, steel, or wood. A pair of Newfoundlands named Shadow and Lance greet visitors with a friendly nuzzle. (Lewis's dog, Seaman, was a Newfoundland, but Cowan's fondness for the breed predates his interest in the L&C Expedition.)

A former deputy sheriff from Chautauqua, New York, Cowan has been working with Keller since the early 1990s. He began by repairing World War I weapons, but the two share a broader interest in antique weapons of all sorts.

When the Lewis and Clark Bicentennial came along, in 2003, they got interested in the debate over the expedition's short rifle. Keller, who does exhaustive research on a weapon before Cowan makes it, initially embraced the then-prevailing view that the short rifle was a modified version of the Model 1792 Harpers Ferry rifle. He changed his mind after examining the Salt Lake City gun, a Model 1800. The rifle is in what Keller calls "almost relic" condition. It isn't a whole rifle but a collection of disassembled rifle parts that have seen a lot of wear. By contrast, the copy made by Cowan is a gleaming facsimile of the gun as it must have looked when it came off the bench at Harpers Ferry 203 years ago.

The craftsmanship that went into Cowan's copy of the Girandoni air rifle was even more exacting because of the weapon's tight tolerances and advanced technology. Building it took him 16 months.

Cowan had set up a makeshift range in his workshop for testing the airgun, and he let me shoot a few rounds. First he showed me one of the lead balls, which at .46 caliber is nearly half an inch in diameter. "We're not talking about a BB gun—this rifle can kill you," he said. Following his instructions, I chambered a ball from the magazine, drew back the hammer, aimed, and fired.



RICK KELLER

The writer fires Ernie Cowan's copy of the Model 1800 rifle.

I had long been curious about what sort of sound an airgun makes. It's a distinctive WHACK!, followed in this case by the near-instant thud of the ball into the bale of straw behind the target. Cowan noted that the airgun is a lot louder indoors. "Outside, if you're shooting at a distance of 50 yards your target wouldn't know it."

Later, we loaded Shadow and Lance into the back of Cowan's truck and drove to an outdoor range to shoot his copy of the short rifle. He poured a measure of black powder down the barrel and followed it with a .52-caliber ball wrapped in a patch of greased cloth. A pinch more powder went into the priming pan.

Keller had warned me that the rifle kicked, but when I fired at a target propped against a dirt bank 25 yards away its recoil seemed no worse than that of the .22-caliber rifles I remember shooting in summer camp 50 years ago. But no .22 ever produced such a prodigious cloud of smoke. The sound was a CRACK! loud and sharp enough to summon the ghosts of Meriwether Lewis and William Clark.

Cowan and Keller appear at antique gun shows, displaying their copies of the Model 1800 and Girandoni airgun (and when available, the disassembled Salt Lake City gun). They are regulars at the Baltimore Antique Arms Show, held annually in March; this year they won the prize for best educational exhibit.

They pursue their interest as a hobby, not a business, in the belief that the only way you can truly understand an antique firearm is to make a copy of it from scratch. In the case of the Girandoni repeater, said Cowan, "It was a real eye-opener to see that until we built one, the experts had little clue as to how this gun actually worked."

Keller swears the guns produced by his partner are more finely crafted than the originals: "After 15 years of working with Ernie I'm still amazed at what he turns out. He builds them better than they did back then."

—Jim Merritt

JIM MERRITT; KELLER & COWAN

Close-up of the Salt Lake City rifle's U-shaped buckhorn rear sight.

Components of the disassembled Salt Lake City rifle, clockwise from top left: butt plate and ramrod thimble; makeshift wooden patchbox cover, which was added later; trigger plate; stock; barrel.

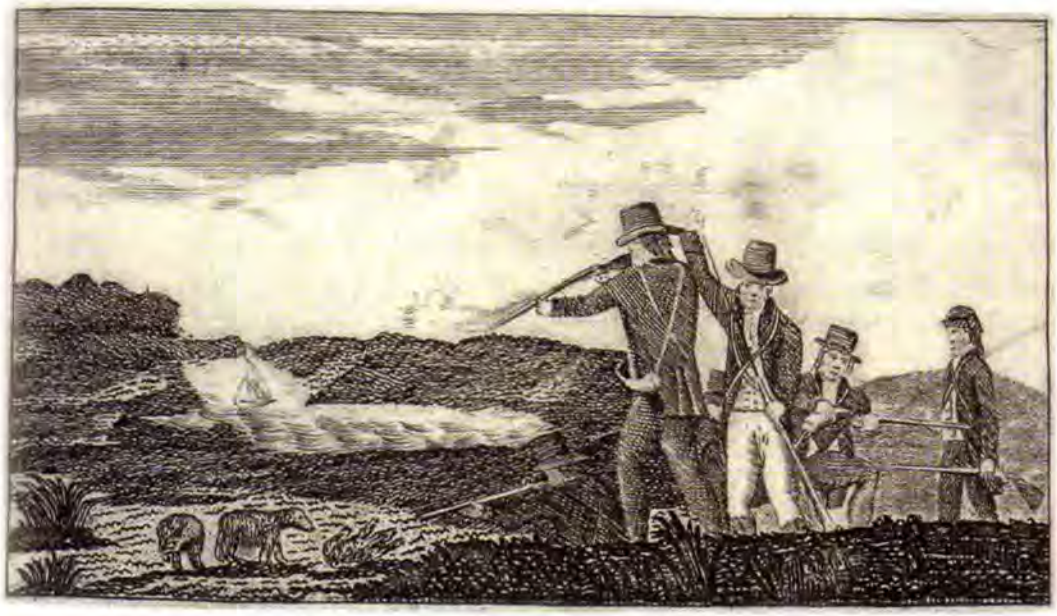
debated whether the expedition's rifles were outfitted with slings. We think they were not, even though Lewis included "15 Gun Slings" on his list of requirements, and Harpers Ferry records show that Lewis drew 15 slings from the armory.[19] The records also show that he drew 15 powder horns, 15 cartouche-box belts, and 15 shot pouches, as well as 500 rifle flints and 125 musket flints.[20] Lewis at the time still thought the expedition's permanent party would include 15 soldiers recruited from frontier forts on the Ohio River. These soldiers would have come already equipped with muskets. We think Lewis intended the slings for muskets, not rifles. In 1803, slings were standard equipment on muskets but were not issued to riflemen, who were meant to carry their arms at the ready at all times. Lewis knew that slings and other accouterments might be in short supply or poor condition at the posts where he expected to recruit, and he made sure to bring his own so as not to deplete under-stocked stores.[21]

It should be noted, too, that nowhere in the journals are rifle slings (or slings of any sort, for that matter) mentioned. The journals do, however, offer at least one piece of circumstantial evidence that the rifles did not carry slings. On July 29, 1804, while walking on a log spanning a creek in present-day Iowa, Private Alexander Willard dropped his rifle in the water—an incident less likely to have occurred had the gun been shouldered on a sling. (Reuben Field jumped in and retrieved it.)

Although open to interpretation, four of the six woodcuts appearing in the 1811 edition of Sergeant Patrick Gass's expedition journals also offer evidence for slingless rifles. A total of nine shoulder arms (all presumably rifles) appear in these illustrations, and none of them have slings. It is easy to dismiss these woodcuts as artistic flights of fancy; all are quite amateurish and have an almost childlike quality. Yet many of their details (particularly of clothing and accouterments) appear to be accurate.[22] One illustration shows Clark and three other men hunting bears; another depicts Lewis shooting at Indians, with two other men gripping rifles. All of the rifles are noticeably short, as though the artist had taken care to distinguish them from long rifles and muskets.[23]

Dearborn, as noted, eventually increased his order for short rifles from 2,000 to 4,000, but the exact number of rifles manufactured at Harpers Ferry between 1803 and 1807 was 4,015.[24] This is according to the so-called Bomford Production Records, compiled in 1822 by Colonel George Bomford, the army's chief of ordnance, from storekeepers' records at Harpers Ferry. The Bomford records for Harpers Ferry production rifles begin in 1804.[25] This would appear to suggest that no rifles were made in 1803, but as one weapons historian points out, storekeepers' records "usually summarized several earlier deliveries and should not be construed as the actual dates of deliveries."[26] The existence of rifles with 1803 lockplates proves that short rifles were manufactured that year, even though those rifles did not go on the books until 1804.

Whatever year their manufacture began, it is clear from the record that Dearborn ordered 4,000 rifles and the armory made 4,015. From this we can reasonably assume that the Harpers Ferry gunsmiths began their production of short rifles with the 15 made for Meriwether Lewis—



This woodcut from the 1811 edition of Patrick Gass's journal depicts the explorers shooting bears. The rifles are noticeably short and do not carry slings.

rifles they numbered 1 through 15—and that the numbering sequence continued as they fulfilled Dearborn's subsequent orders for 4,000 more.

To put it another way, the 15 "extra" rifles over and above the 4,000 ordered by Dearborn were the pre-production rifles ordered by Lewis. The physical evidence found on the Salt Lake City gun suggests it is one of Lewis's rifles and a relic of the expedition.

Richard Keller and Ernest Cowan are leading authorities on the history of early American firearms. They live and work in Chambersburg, Pennsylvania, and make museum-quality copies of antique guns.

NOTES

[1] A Model 1803 rifle manufactured in 1806, for example, would have "1806" on its lockplate. Unlike a smoothbore firearm such as a musket or shotgun, a rifle has spiral grooves—rifling—cut into its bore. The rifling imparts spin to the ball, resulting in greater range and accuracy. In any flintlock rifle, the caliber (diameter) of the bore is slightly larger than the caliber of the ball. The gap allows room for a cotton patch that wraps around the ball and presses against the rifling. This rifling-patch-ball connection gives the ball its spin.

[2] Donald Jackson, ed., *Letters of the Lewis and Clark Expedition with Related Documents, 1783-1854*, 2 volumes (Urbana: University of Illinois Press, 1978), Vol. 1, pp. 75-76. Dearborn spelled Perkin's name incorrectly as "Perkins."

[3] Charles Winthrop Sawyer, *Our Rifles*, Volume 3 of *Firearms in American History*, 3 volumes (Boston: Pilgrim Press, 1920), pp. 127-128; Frances B. Heitman, *Historical Register and Dictionary of the United States Army*, 2 volumes (Washington, D.C.: U.S. Government Printing Office, 1903), Vol. 2, p. 567; Stuart E. Brown, Jr., *The Guns of Harpers Ferry* (Berryville, Va.: Virginia Book Co.), p. 10. Sawyer was the first person to argue for the existence of a Model 1800 rifle. He does not use the term Model 1803, but instead refers to all contract rifles made at Harpers Ferry through 1814 as Model 1800s.

[4] Government records show the armory produced 293 muskets in 1801, 1,472 in 1802, and 1,048 in 1803. Merritt Smith, *Harpers Ferry Armory and the New Technology* (Ithaca, N.Y.: Cornell University Press, 1977), Table 1.

[5] James E. Hicks, *U.S. Military Firearms, 1776-1956* (La Canada, Calif.: J.E. Hicks, 1962), p. 25.

[6] On November 1, 1804, Dearborn ordered Perkin "to continue making them [short rifles] until 4000 shall be completed." (Ibid.) Government records (Smith, Table 1) indicate that the Harpers Ferry armory produced 4,015 rifles between 1804 and 1807 (772 in 1804, 1,716 in 1805, 1,381 in 1806, and 146 in 1807). As discussed later in the text, this tally includes Model 1800s and Model 1803s manufactured in 1803, even though the records do not list any rifles made that year. Evidence for the start of manufacture in 1803 comes from lockplates marked with that year and from a letter (also discussed later) Dearborn wrote to Perkin on December 2, 1803, suggesting minor alterations to the pattern rifle. (Hicks, p. 25.) An additional 5,703 Model 1803s—most with barrel lengths of 36 inches—were made between 1814 and 1820. Some weapons historians believe these later rifles ought to be called Model 1814s.

[7] The Model 1792 hypothesis was first presented by Frank A. Tait in "The U.S. Contract Rifle Pattern of 1792," an article in the May-June 1999 issue of *Men at Arms*, the magazine of the National Rifle Association. Proponents of the theory that the expedition's short rifle was a modified Model 1792 dismiss the possibility that instead it might have been, in effect, a pre-production Model 1803 based on Dearborn's specifications. They say that it would have been impossible, as one source puts it, "to design, plan, and manufacture from scratch 15 brand new weapons between May 26 (the earliest probable date of the receipt of Dearborn's letter)" and early July, when Lewis returned to Harpers Ferry to pick up the completed weapons; the quote is from Robert J. Moore, Jr., and Michael Haynes, *Tailor Made, Trail Worn: Army Life, Clothing and Weapons of the Corps of*

Discovery (Helena, Mont.: Farcountry Press, 2003), p. 259. This argument fails to consider, of course, that most or all of the design and prototyping had already been done.

[8] Lewis left Harpers Ferry on April 14 and proceeded to Lancaster, Pennsylvania, and then to Philadelphia. He returned to Washington on June 6 or 7, two weeks after Dearborn wrote his letter to Perkin.

[9] Jackson, Vol. 1, p. 40.

[10] Ibid., p. 107. The main purpose of Lewis's return to Harpers Ferry was to arrange for shipment of the manufactured goods (which along with weapons included the iron frame of a collapsible boat) to Pittsburgh, where he went next to supervise construction of the expedition's keelboat. He left Harpers Ferry on July 8, immediately after posting his letter to Jefferson.

[11] Hicks, p. 25.

[12] The Model 1800 could easily have been prototyped in the 1800-1803 time frame, as Sawyer suggests, and something close to a pattern gun was probably available by the time of Lewis's arrival in March 1803.

[13] Gary E. Moulton, ed., *The Journals of the Lewis & Clark Expedition*, 13 volumes (Lincoln: University of Nebraska Press, 1983-2001), Vol. 6, p. 441. Among Lewis's list of expedition requirements, which is undated but which he apparently compiled before his first visit to Harpers Ferry, were "Extra parts of Locks" (Jackson, Vol. 1, p. 70); but as this journal entry explicitly states, the expedition's stores included "extra locks" as well.

[14] Moulton, Vol. 8, p. 80. Clark's entry for July 2, 1806, reads in part, "two of the rifles have unfortunately bursted near the muscle. Shields Cut them off and they Shute tolerable well." One of the rifles was "very Short" as a result of Shield's amputation and was exchanged with a Nez Perce for an unmutilated rifle given to him earlier for guiding them across the Bitterroot Mountains.

[15] Brown, p. 32; Louis A. Garavaglia and Charles G. Worman, *Firearms of the American West, 1803-1865* (Albuquerque: University of New Mexico Press, 1984), p. 9.

[16] Sawyer, p. 131.

[17] English companies made the best powder, and the powder used in the short rifle was almost certainly imported from England. At the time of the Lewis and Clark Expedition, the DuPont company, which had started making gunpowder in 1801 or 1802, manufactured a coarser-grained powder based on a French formula. (Personal correspondence, Hagley Museum Library and Archive, Wilmington, Del.)

[18] Jackson, Vol. 1, pp. 87, 97, and 98. The inventory also lists 176 pounds of coarser "Gun powder" for use in the expedition's muskets and other weapons. In his journal entry for February 1, 1806, Lewis describes inspecting the corps' powder supply at Fort Clatsop, which comprised 27 canisters of "best rifle powder," four canisters of "common rifle" powder, three canisters of "glaized" powder, and one canister of "musqut powder." (Moulton, Vol. 6, p. 265.) The "common" rifle powder was probably reserved for the expedition's long rifles (all personal weapons). "Glaized powder" was an English term for rifle powder, but we are not sure where it fell on the quality scale. Lewis included "200 lbs. Best rifle powder" in his list of expedition requirements. (Jackson, Vol. 1. p. 70.)

[19] Jackson, Vol. 1, pp. 70 and 98.

[20] Ibid., p. 98.

JIM MERRITT

Ernest Cowan loads the Model 1800 short rifle he built (based on the Salt Lake City rifle) with a 52-caliber ball.

[21] An 1803 inspector's report of deficiencies at Fort Kaskaskia included "Gunslings wanting." Moore and Haynes, p. 14.

[22] A point made by Moore and Haynes, whose *Tailor Made, Trail Worn* is the definitive work on the Corps of Discovery's clothing.

[23] All six of these frequently printed illustrations can be found in Carol Lynn MacGregor, ed., *The Journals of Patrick Gass* (Missoula, Mont.: Mountain Press, 1997), pp. 62, 77, 90, 136, 205, and 208. Sling proponents point to the well-known full-length portrait of Lewis painted by Charles B.J.F. de Saint-Mémin. Painted in Philadelphia after the expedition, it depicts Lewis posed with a long rifle with sling attachments. The rifle's fancy trigger guard, checkered wrist, and strange patchbox rule this out as any sort of military firearm—it may well have been a prop supplied by the artist. Even if it were a recognizable military short rifle it could not have been one carried on the expedition, since all weapons and other equipment were auctioned in St. Louis following the Corps of Discovery's return.

[24] Hicks. p. 25; Smith, Table 1. As previously noted, Dearborn placed the order in a letter to Perkin dated November 1, 1804.

[25] Smith, Table 1, shows Harpers Ferry production records for all types of weapons between 1801 and 1842. Bomford is Smith's source for the years 1801-1822. An additional 15,703 Model 1803s were manufactured between 1814 and 1820. Some weapons historians have reclassified these later production rifles as Model 1814s due to significant design changes, including a longer barrel length of 36 inches.

[26] George Moller, *American Military Shoulder Arms*, 2 volumes (Niweat, Colo.: University Press of Colorado, 1993),Vol. 2, p. 347.

MERIWETHER LEWIS'S WONDER WEAPON

The captain's airgun "astonished" the Indians, not least for its ability to shoot many times without reloading. New evidence suggests that the one he took on the expedition was a 22-shot repeater in the author's collection

BY ROBERT BEEMAN

The Girandoni air rifle that may have belonged to Lewis

Meriwether Lewis's airgun is mentioned 39 times in the journals of the Lewis and Clark Expedition—more than any other weapon in the Corps of Discovery's arsenal—but it is never described. The last contemporary reference to this elusive weapon appears on a list of items shipped east from St. Louis in late 1806.[1] In 1846, it surfaced briefly in a notice advertising an estate sale for Isaiah Lukens, a Philadelphia clock, instrument, and gun maker: "1 large air gun . . . used by Messrs. Lewis & Clark in their exploring expeditions."[2] It was presumably purchased by an individual and passed down unheralded in his family. The notice makes clear that the airgun still existed 40 years after the expedition's return, and it is reasonable to assume that it survived to the present day.

The first mention of the airgun in the Lewis and Clark journals occurs in the very first entry made by Lewis—on August 31, 1803, the day he began his descent of the Ohio River in the expedition's keelboat, on his way to meet William Clark at Louisville. Lewis stopped briefly at a place called Brunots Island. As he recorded,

> Left Pittsburgh this day at 11 ock with a party of 11 hands 7 of which are soldiers, a pilot and three young men on trial they having proposed to go with me throughout the voyage. Arrived at Bruno's Island 3 miles below halted a few minutes. went on shore and being invited on by some of the gentlemen present to try my *airgun* which I had purchased brought it on shore charged it and fired myself seven times fifty five yards with pretty good success; after which a Mr. Blaze Cenas being unacquainted with the management of the gun suffered her to discharge herself accedentaly[.] the ball passed through the hat of a woman about 40 yards distanc cuting her temple about the fourth of the diameter of the ball; shee feel instantly and the blood gusing from her temple[.] we were all in the greatest consternation supposed she was dead [but] in a minute she revived to our enespressable satisfaction, and by examination we found the wound by no means mortal or even dangerous.[3]

The only detailed contemporary description of the

RIFLE PHOTO: ROBERT DAVID BEEMAN © 2006

airgun in action appears in a travel diary kept by Thomas Rodney, who met Lewis at Wheeling, Virginia, in early September of 1803, a week after the accident at Brunots Island. The passage reads,

> Visited Captain Lewess barge. He shewed us his air gun which fired 22 times at one charge. He shewed us the mode of charging her and then loaded with 12 balls which he intended to fire one at a time; but she by some means lost the whole charge of air at the first fire. He charged her again and then she fired twice. He then found the cause and in some measure prevented the airs escaping, and then she fired seven times; but when in perfect order she fires 22 times in a minute. All the balls are put at once into a short side barrel and are then droped into the chamber of the gun one at a time by moving a spring; and when the triger is pulled just so much air escapes out of the air bag which forms the britch of the gun as serves for one ball. It is a curious peice of workmanship not easily discribed and therefore I omit attempting it.[4]

In an article in the November 2002 WPO, firearms historian Michael Carrick drew attention to this passage and its bearing on questions about the kind of airgun Lewis carried on the expedition. Carrick pointed out that Rodney could only be describing a repeating rifle of the sort made by Bartholomäus (also spelled Bartolomeo) Girandoni of Vienna. I was initially skeptical of Rodney's claim that Lewis had a repeating air rifle and continued to believe that the expedition airgun was probably a single-shot weapon made in the Lukens shop and now owned by the Virginia Military Institute.[5] Evidence supporting the V.M.I. gun was stronger, I believed; casting further doubt on Rodney's account were remarks by the editors of his diary that he was prone to "creative exaggeration and rich embellishment."

Previous articles about the Girandoni military airgun tended to repeat the error that these guns had 20-shot magazines (capacity varied depending on model). Rodney was the only source to mention a 22-shot capacity—an exacting statement made twice in his account. Consideration of this fact is one of the points that finally compelled me to believe Rodney. Physical evidence from a Girandoni repeating air rifle in my collection further led me to accept his report and to conclude that this rifle, in fact, was the one carried on the expedition.

The Girandoni Repeating Air Rifle

Girandoni produced some 1,500 air rifles for the Austrian army. They were delivered between 1780 and 1788. These powerful, rapid-fire rifles—the assault weapons of their day—were years ahead of their time, but they also required high maintenance and staggering logistics to keep them

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Top and side views of the breech area of the Beeman airgun. The spring keeps tension on the loading bar. Pushing the bar to the right allows a ball to move from the magazine into a chamber inside the bar. When the shooter releases the bar, the spring pushes the loading bar back to the left, moving the ball into firing position.

charged with air during battles; they also had a high failure rate, due particularly to defective iron in the air reservoirs. Presumably for all these reasons, the Austrian army retired its Girandoni rifles in 1799. They were still in secure storage as of 1806, but some evidently had found their way into civilian circulation, and at least one of these made it across the Atlantic in time for Lewis to acquire it before the start of the expedition.

In 1970s, I was fortunate enough to acquire for the Beeman Airgun Collection a Girandoni air rifle of the same model supplied to the Austrian army. Its provenance was unknown, but over the following three decades I learned that only one or two Girandoni military repeating air rifles exist in the Americas. Thus, we are not searching through a long list of candidates for the Lewis air rifle. Actually, there are very few of these rifles anywhere in the world, and European museums indicate that their specimens have never left Europe. Copies of the Girandoni system are also uncommon, and virtually all of them were either made too late to have been carried on the expedition or are of a design inappropriate for such a wilderness journey. Furthermore, their ball capacities were less than 22.

The Beeman rifle has a butt reservoir and a rifled bore with a caliber of 11.75 mm (.463 inch), a popular caliber of that period. As noted in the Rodney account, its iron reservoir, which holds a supply of compressed air and serves as the rifle's buttstock, has an unusual "bag" shape. The rifle has an external tubular magazine, located along the right side of the barrel, and a transverse loading bar at the breech end of the barrel. A flat spring running the length of the outside of the magazine holds the loading

bar to the left. When the gun is held muzzle up and the left end of the loading bar is pushed by the shooter, the bar moves to the right and a chamber within the bar receives a ball by gravity feed from the magazine. The ball is moved into firing position behind the barrel when the shooter releases pressure on the bar and the spring pushes the loading bar back to the left.

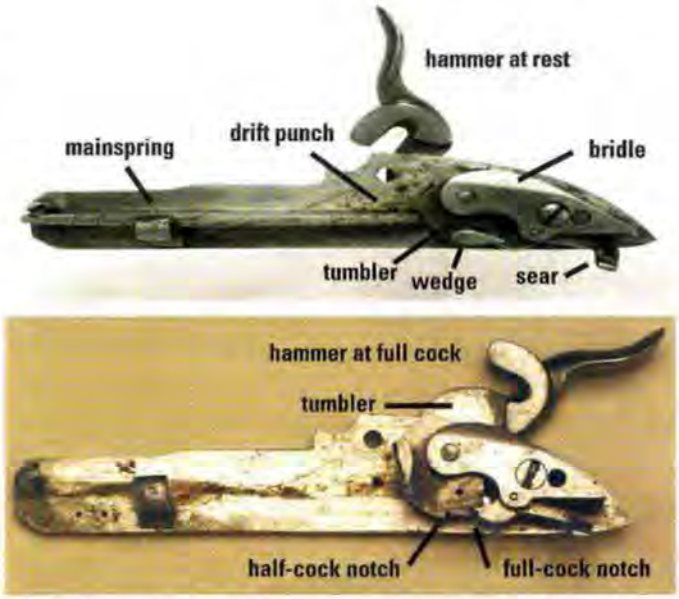
The magazine holds 21 balls; with one ball seated in the firing socket of the loading bar, the rifle's total capacity is 22 balls—a critical point, for as Rodney's account states, Lewis's "air gun . . . fired 22 times at one charge."

Lewis almost certainly acquired his airgun during his monthlong stay in Philadelphia during the spring of 1803, while outfitting the expedition. He probably purchased it from Isaiah Lukens, or possibly Joseph Kunz. Lukens had been making some excellent single-shot airguns, probably for several years before Lewis came to Philadelphia to equip the expedition; Kunz at the very least expanded that line of airguns. A third airgun enthusiast in Philadelphia at the time was a mechanically talented fellow named Coleman Sellers. I think of these three young men—they were all in their twenties—as America's first "airgun nuts." Of all the people in Philadelphia in 1803, they would be the ones most likely to come by a Girandoni air rifle from Europe.[6]

Telltale features of the Beeman gun

The turnaround in my views about the expedition's air rifle occurred in late 2004, when I found that the Girandoni air rifle in the Beeman collection could be charged with exactly 22 lead balls and learned that it has certain features matching repairs to Lewis's gun made by the Corps of Discovery's blacksmith and gunsmith, John Shields.

I had loaned the rifle to Ernest Cowan and Richard Keller, a gun-maker and a weapons historian in Chambersburg, Pennsylvania, who specialize in replicating antique firearms for museums and private collectors; they asked to borrow my Girandoni to use it as a model for several replicas they wanted to make. In consultation with two British airgun authorities, Geoffrey Baker and Colin Currie, they confirmed that the weapon was a military version made in the Girandoni shop. None of this came as a particular surprise to me, but one discovery they made did get my attention: the rifle's mainspring (the interior component that puts tension on the hammer) was not the original but a very old replacement; it was apparently made from a farrier's file, a type of coarse rasp used for trimming a horse's hoof. A small area under this improvised mainspring revealed traces of the diamond-shaped groove pattern typical of a double-cut file of this sort. This surprising revelation, combined with the gun's 22-ball capacity, began to ring some mental bells.



Inside views of lock with hammer at rest (top) and at full cock (bottom). In top photo, drift punch (which Lewis didn't know about) restrains the thick, flat mainspring (removed in the bottom photo). Notches in the tumbler engage the sear at the half- and full-cock positions. The sear and tumbler rotate on pins secured by the bridle. See diagrams on page 34 for details of how parts interact during firing sequence.

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Farrier's file (top) and underside of the airgun's replacement mainspring. Note the diamond pattern of the file's double-cut rasps and traces of the same pattern on the spring. This field repair was probably made by the expedition's able gunsmith and blacksmith, John Shields.

We know from Lewis's journals that during the expedition his airgun's mainspring broke and was replaced. Such a repair is the very kind expected of John Shields, who time and again on the expedition showed a knack for improvising, using whatever materials happened to be on hand. A file probably would have been the only piece of suitable metal carried on the expedition of the size needed to replace such a long, thick mainspring. Shields was more than capable of such special work as shaping, annealing, and re-tempering a farrier's file. In his journal entry for June 10, 1805, Lewis wrote,

> Shields renewed the main Spring of my air gun[.] we have been much indebted to the ingenuity of this man on many occasions, without having served any regular apprenticeship to any trade, he makes his

own tools principally and works extremely well in either wood or metal.[7]

The mainspring of a military version of the Girandoni air rifle was quite rugged and under normal circumstances would not be expected to break.[8] When removing the rifle's lock mechanism for repair or cleaning, however, it was important to secure the mainspring by inserting a drift punch into a small hole in the lockplate—otherwise, the sudden release of the mainspring could cause it to snap. Most likely, this is what happened to the mainspring of Lewis's gun. Given their unfamiliarity with the Girandoni design, probably neither Lewis nor Shields was aware of the purpose of the lockplate hole or the necessity of securing the mainspring in this manner.

There are other features peculiar to the Beeman rifle that point to a connection with the expedition. On August 6, 1805, while the explorers were ascending the Jefferson River, three of the canoes swamped while navigating rapids. At least one of them struck rocks, resulting in significant damage to the boat itself and to its cargo, which appears to have included the air rifle. In his journal entry for the next day, Lewis wrote, "my air gun was out of order and her sights had been removed by some accedent[.] I put her in order and regulated her. she shot again as well as she ever did."[9]

Close examination of the Beeman rifle reveals a number of repairs consistent with the damage that likely occurred in this accident (damage of a sort almost never found on ordinary working guns):

- The forward barrel lug, which bears a cross pin to retain the brass nose cap on the forward tip of the stock, has been torn open and was later partially repaired.
- The forward end of the stock forearm has been repaired. The stock is made of European walnut, but a replacement piece used in the repair is American walnut.
- The original cast-brass middle thimble was crushed and an inconsistent rolled-brass thimble substituted for it. (The original cast part could not have been bent back into shape without breaking.)
- The existing wooden cleaning rod is clearly a replacement, which one would expect given damage to the center and left-front area of the barrel and stock.
- A close look at the barrel surface and sights reveals repairs by someone less skilled than Shields—possibly Lewis, who specifically noted that the sights had been removed and that he himself had put "her [the gun] in order and regulated her" [i.e., adjusted the sights]. Longitudinal draw-file marks on the original barrel are crossed by rough transverse file marks consistent with the trimming of impact gouges and replacement of the front sight. The rough nature and irregular angles of the forward filing marks suggest this was not the work of a skilled gunsmith like Shields but of an unskilled person like Lewis.

Underside of octagonal barrel showing torn-open lug, evidence of damage that might have occurred in canoe accident of August 6, 1805. Note angled filemarks on middle flat of barrel—evidence of possible field repair—compared to lengthwise factory marks on bottom flat.

Opened joints on the forearm of the gun's stock, which also may have been damaged in the accident. The left piece is original European walnut, while the replacement piece (right) is American walnut.

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Middle thimble on the right is from the Beeman airgun. It is an obvious replacement, made from rolled brass. The gun's other thimbles are cast from solid brass like the example at left (a copy of an original).

Another particular of the Beeman air rifle appears to connect it to the accident on the Ohio in 1803. Recall that Lewis, while stopped at Brunots Island, shot the rifle seven times "with pretty good success" and then handed it to a certain Blaze Cenas, who, "being unacquainted with the management of the gun," fired it accidentally. The ball hit a woman standing 40 yards away, cutting her temple and doubtless shaking her up, but leaving her otherwise unhurt.

Lewis and others present that day (including Cenas) were familiar with flintlock firearms, and it would have

been natural for any of them to put the gun on half cock to safeguard it against accidental firing. A typical flintlock will not fire on half cock when the trigger is pulled—to fire the gun you must pull the hammer past the half-cock position (normally to full cock). A tumbler attached to the base of the hammer has notches in it at the half- and full-cock positions. A sear, or catch, snaps into one or the other notch, holding the tumbler and hammer in place. Pulling the trigger releases the sear and trips the hammer.

It turns out that the Beeman rifle has a faulty tumbler—the spur on the half-cock notch is broken off. While the gun can still be brought to half cock, the sear rests precariously in the notch; a light touch to the trigger or even a jolt can release it. The broken spur meant that Lewis's airgun at half cock had a hair trigger. (Firing from the half-cock position would release less air from the reservoir than firing from full cock, but as the wounding of the unfortunate woman attests, the shot would still be powerful enough to be dangerous.)

One other contemporary mention of Lewis's airgun is a brief passage in an account by the Canadian fur trader Charles McKenzie relating his visit to the Mandan and Hidatsa villages in the winter of 1804-05, when the expedition was camped nearby at Fort Mandan. According to McKenzie, "The Indians admired the air gun as it could discharge forty shots out of one load, but they dreaded the magic of the owners." While some writers have interpreted this to mean that the magazine held 40 balls, I believe McKenzie meant that the rifle could fire 40 shots with a single load of air in the reservoir. A replica Girandoni airgun of .51 caliber can fire at least 35 balls on a single charge, so Lewis's smaller .46-caliber weapon should easily have been able to fire 40 balls. It is also possible that Lewis carried a Girandoni speed-loader, an accessory holding a 20-ball load for quickly refilling an emptied magazine. A speed-loader would have enabled him to fire two magazine loads—40 rounds in all—in quick succession on a single charge of air.

Given the airgun's capabilities, some have wondered why it apparently was never used for hunting. My assumption is that its defective half-cock made it unsafe for regular use and that Lewis quickly realized it should be reserved for its real value—the psychological impact it had on Indians. This wonder weapon was quiet, produced no flash or smoke, and seemingly could shoot forever. McKenzie's statement that the Indians "dreaded the magic of the owners" of this awesome weapon is echoed by Private Joseph Whitehouse. On August 30, 1804, when the explorers met with the Yankton Sioux,

Left: Original components (spring, spindle, seat) of air intake/exhaust valve. Right: Reproductions of same. The valve's seat or gasket, located at the top of the spindle, was made of three layers of hardened leather.

Breech area with lockplate and lock removed. A brass medallion, placed for scale purposes, is 22 mm (7/8th inch) in diameter.

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The bronze receiver (analogous to the receiver in a firearm) receives air from the reservoir when the gun is fired. Dotted line marks path of air through air-transfer passage from reservoir to ball chamber.

> Captain Lewis took his Air Gun and shot her off, and by the Interpreter, told them there was medicine in her, and that she could do very great execution. They all stood amazed at the curiosity; Captain Lewis discharged the Air Gun several times, and the Indians ran hastily to see the holes that the Balls had made which was discharged from it. at finding the Balls had entered the Tree, they shouted a loud at the sight and the Execution that was done surprized them exceedingly.[10]

On the return journey, when the expedition was dealing with troublesome tribes on the Columbia, Clark described how "Capt Lewis fired his Air gun which astonished them in Such a manner that they were orderly and

kept at a proper distance dureing the time they Continued with him."[11] Clark is saying that the airgun was the only thing that kept the Indians at a safe distance. The Indian method of attack was to rush an enemy after the defenders fired their single-shot guns. It seems unlikely that a single-shot air rifle would have been so intimidating.[12]

Airgun historian and LCTHF member Robert Beeman, Ph.D., is a professor emeritus at San Francisco State University. He lives in Healdsburg, California, and is the founding publisher of Airgun Journal *and* Airgun News *and the senior author of the international series* The Blue Book of Airguns. *He and his wife, Toshiko, are co-owners of the Beeman Airgun Collection and founders of Beeman Precision Airguns. This article is adapted from a much longer monograph available on the author's Web site, www.beemans.net. (To access it, scroll down to "History/Lewis Air Rifle.")*

Notes

[1] Gary E. Moulton, ed., *The Journals of the Lewis & Clark Expedition*, 13 volumes (Lincoln: University of Nebraska Press, 1983-2001), Vol. 8, p. 419.

[2] The full quotation states that the airgun was "made for, and used by" Lewis and Clark, but as the ensuing text argues, the gun almost certainly was not made by Lukens. For a facsimile of the estate-sale notice, see Michael Carrick, "Meriwether Lewis's Air Gun," WPO, November 2002, p. 16.

[3] Moulton, Vol. 2, p. 65.

[4] Dwight L. Smith and Ray Swick, eds., *A Journey through the West: Thomas Rodney's 1803 Journal from Delaware to the Mississippi Territory* (Athens: Ohio University Press, 1997), p. 50.

[5] Carrick's article appears on pages 15-21 of the November 2002 WPO. Follow-up letters appear in WPO issues of August 2003 (Carrick), p. 2; November 2003 (Kerry Lippincott), p. 3; February 2004 (Beeman), pp. 5-6; May 2004 (Carrick), pp. 3-4; and November 2004 (Beeman), pp. 3-4.

[6] There is no evidence that Coleman Sellers was a gunsmith, but he was involved in his father's boiler trade and apparently imported gun barrels via that business.

[7] Moulton, Vol. 4, p. 275. Lewis's entry for the previous day (June 9) states in part, "as we had determined to leave our blacksmith's bellows and tools here it was necessary to repare some of our arms, and particularly my Airgun the main spring of which was broken." (Ibid., p. 271.)

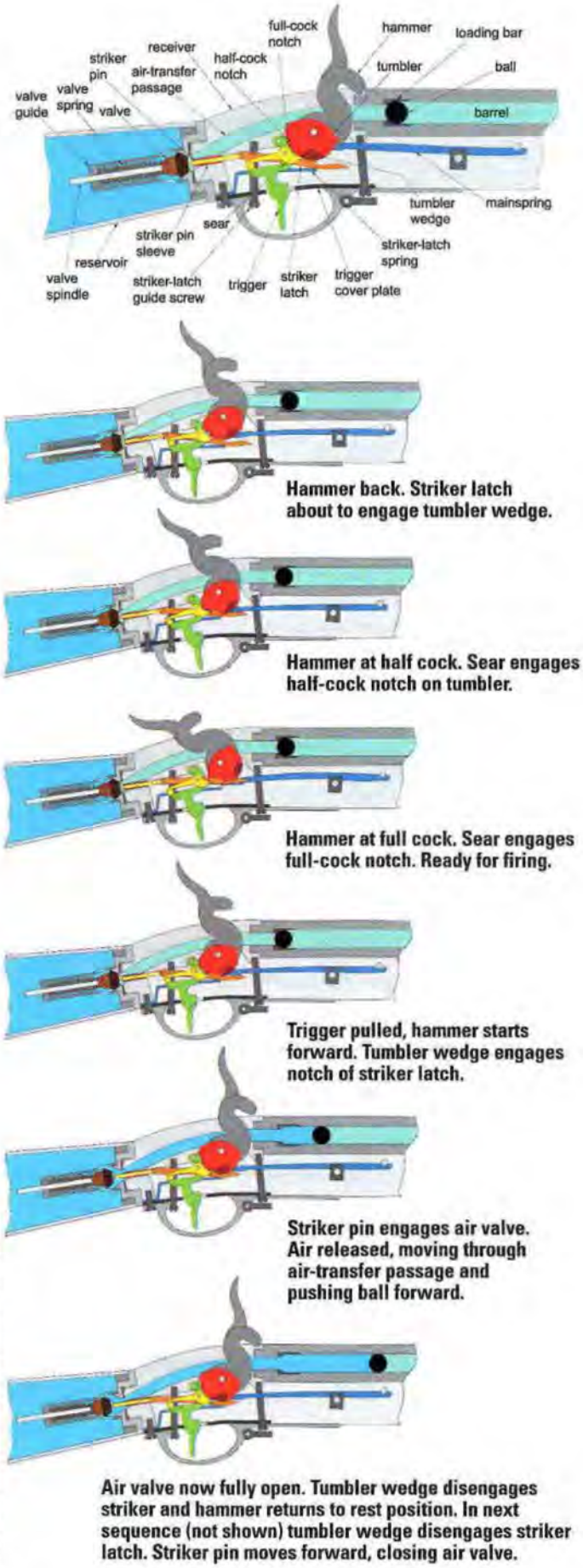
[8] The Girandoni mainspring was unusual in being an extremely strong *flat* spring, in contrast to the V-shaped mainsprings typical of flintlocks.

[9] Moulton, Vol. 5, p. 55.

[10] Ibid., Vol. 11, p. 66.

[11] Ibid., Vol. 7, p. 66. Journal entry for April 3, 1806.

[12] The Beeman Girandoni is now on display at the U.S. Army War College, in Carlisle, Pennsylvania, which has assumed responsibility for its security and keeps it under guard 24 hours a day.



DRAWINGS BY GEOFFREY BAKER. REPRODUCED BY PERMISSION OF GEOFFREY BAKER AND COLIN CURRIE. FROM *THE CONSTRUCTION AND OPERATION OF THE AIR GUN*, VOL. 1, *THE AUSTRIAN REPEATING RIFLE* ©2002.

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In the waning days of the Lewis and Clark Bicentennial, two new biographies have been published about authors whose books on the expedition have profoundly influenced public impressions of the Corps of Discovery. One is Sheri Bartlett Browne's *Eva Emery Dye: Romance with the West*, from Oregon State University Press. The other is Mike Mackey's *Inventing History in the American West: The Romance and Myths of Grace Raymond Hebard*, from Western History Publications.

Students of the Lewis and Clark story have long admired and criticized Dye's *The Conquest: The True Story of Lewis and Clark* (A.C. McClurg, 1902) and Hebard's *Sacajawea: A Guide and Interpreter of the Lewis and Clark Expedition, with an Account of the Travels of Toussaint Charbonneau and of Jean Baptiste, the Expedition Papoose* (Arthur H. Clark, 1932). Given our collective interest in the Corps of Discovery and the two women's romanticized contributions to that story, it is easy to forget they were both authors of several other best-selling western histories.

Inventing History and *Romance with the West* are thoughtful and thought-provoking biographies. The similarities between the two women portrayed—Dye, who was born in Illinois in 1855, and Hebard, born in Iowa in 1861—are remarkable. For the time, both were well educated women, who in turn became outspoken, confident historians, authors, educators, and advocates for women's education and suffrage. They were fascinated with the history of the West and particularly of the states they called home, Dye's Oregon and Hebard's Wyoming, and in the roles of pioneering women.

There are also differences between the two. Dye earned a master's degree from Oberlin College. According to Browne, she was a skillful writer, a thorough researcher, and a gentlewoman who felt a civic obligation to bring history and culture to western Oregon. She was a prolific author whose books were a popular "blend of historical detail and decorated facts." (Despite the word "true" in the subtitle of *The Conquest*, the book is a fictional account of the expedition.)

Both Eva Emery Dye and Grace Raymond Hebard left their marks on public perceptions about the Corps of Discovery, Sacagawea, and Charbonneau

Browne gives us a glowing portrait of an exceptional woman and historian. By contrast, Mackey's view of Hebard is far more mixed. She may have padded her résumé with questionable degrees from the State University of Iowa and Illinois Wesleyan University. Living in Wyoming, Hebard saw herself as a "pioneer" who eagerly tackled nontraditional jobs—as an engineer and surveyor, a trustee of the newly formed University of Wyoming, and a college professor and librarian. Mackey presents her as an argumentative and abrasive self-promoter who brooked no disagreement with her romantic perceptions of western history. He is critical of her methodology, scholarship, and skill as a writer.

However we (and their biographers) may feel about Dye's and Hebard's histories of the expedition, both authors broke new ground in our knowledge of the Corps of Discovery.

Dye, who wrote four other works of historical fiction besides *The Conquest*, had the advantage of personal contact with descendants of her subjects. Her notes for *The Conquest* show she queried the families of the two captains and of several enlisted men, including Patrick Gass, William Bratton, and Alexander Willard. Unfortunately, Browne does not examine Dye's correspondence with Willard's son, Lewis, which included the startling revelation that his father had kept a journal on the expedition (it is still lost). Nor does Browne tell us if Dye ventured into the homelands of the Shoshones to talk with the descendants of Sacagawea.

Dye portrayed Native Americans according to the prejudices of her day—either as "good Indians" on the road to civilization or as "savages" refusing to abandon their culture for the white man's ways. Hebard, writing thirty years later, had the same stereotypical mindset. Did other contemporary historians share Dye's and Hebard's views

of Indians? Regrettably, neither biographer explores this question.

Hebard was a member of many heritage organizations, including the Daughters of the American Revolution and the Wyoming Pioneer Association, and like Dye she wrote about other historical subjects besides the Corps of Discovery. Her biography of the Shoshone chief Washakie was published in 1930, two years before *Sacajawea*. She used her contacts with Washakie's family and other Shoshones to develop her biography of Sacagawea. She spent considerable time visiting the Wind River Indian Reservation, near Lander, Wyoming. Elders there shared oral histories of a woman they knew as "Porivo," who died on the reservation in 1884. Hebard became convinced that Porivo was Sacagawea—a view largely dismissed by mainstream historians, who believe she died in South Dakota in 1812.

Both books have their strengths. Browne and Mackey have conducted exhaustive research, scouring primary and secondary sources to produce sound biographies of two independent-minded women determined to share their visions with a wide readership.

Both biographies also have their weaknesses. Astute readers of WPO will notice any number of minor errors of historical fact. Browne perpetuates the myth that Toussaint Charbonneau was an abusive husband and a lazy and cowardly member of the expedition. Mackey fails to provide information about Hebard's efforts to track down the fascinating story of Jean Baptiste Charbonneau (who lived until 1866 and whose wide-ranging exploits in Europe and the American West have inspired two biographies) and his mentor, Duke Paul of Württemberg. Nor does he come to grips with Hebard's 16-year professional relationship with her publisher, Arthur H. Clarke and Company. The firm continues to be a family-owned enterprise, turning out new books of Western Americana and reprints of its earlier works. Like Dye's interviewing of descendants of the Corps of Discovery, Mackey presumably could have interviewed descendants of the company's founder, Arthur H. Clarke.

Three of Dye's books—*The Conquest* and biographies of the British-Canadian fur traders Ranald McDonald and John McLoughlin—were published by A.C. McClurg, of Chicago. Browne, like Mackey, largely overlooks the working relationship between author and publisher. I would like to have learned more, too, about Dye's role in the creation of the famous statue of Sacagawea in Portland's Washington Park. She details Dye's involvement with the Sacajawea Statue Association but leaves out two crucial pieces of the story: how Alice Cooper came to be selected as the sculptor, and how Cooper (probably under Dye's influence) came to portray her subject in such an idealized poise—a young woman gazing to the horizon, with one arm uplifted to the heavens.

Rules for would-be biographers

In conclusion, I offer this unsolicited advice to anyone tempted to write a biography of any other important author associated with the Corps of Discovery. First—know the story. Aficionados will want to read your book because it is about an author whose work they know well and very likely respect. If your book contains errors, as these two do, your work will also be suspect. Second—use the best, most up-to-date, and respected materials, including primary sources, to analyze your subject's work. Don't rely on unscholarly narratives, barely disguised fiction, or out-of-date research, especially if you criticize your subject for the same failings! Third—remember that authors often have close connections with their editors and publishers, and that this is an important part of the story.

Fourth—remember that no author is either perfect or completely inept. As Browne and Mackey for the most part have succeeded in doing, tell your story in a balanced way.

—Barb Kubik

The reviewer is an independent scholar based in Vancouver, Washington, and a former president of the LCTHF.

Present at the creation: The conservation roots of the LCTHF (Part I)

By Keith G. Hay

This is the first part of a two-part article about the origins of the Lewis and Clark Trail Heritage Foundation—Ed.

As the Lewis and Clark Bicentennial successfully draws to a close and we begin to focus on the "Third Century," we must not forget the colorful history that gave birth to the Lewis and Clark Trail Heritage Foundation some 44 years ago.

This story begins with a legendary conservation leader, cartoonist, and visionary who inspired others to protect and ultimately designate the route of the Lewis and Clark Expedition as a National Historic Trail. His name was Jay Norwood "Ding" Darling and his legacy organization is known as the J.N. "Ding" Darling Foundation. (Ding is a contraction of Darling's last name.)

Darling began his career in 1900 as a cartoonist for the *Sioux City Journal*. In 1906, he moved to the *Des Moines Register* and created a daily editorial cartoon that appeared on the paper's front page. His cartoons on protecting our natural resources appeared in nearly 150 newspapers and earned him two Pulitzer Prizes.

In 1934, in the middle of the Great Depression, he became chief of the U.S. Bureau of Biological Survey, which later became the U.S. Fish and Wildlife Service, and obtained federal funding to acquire three million acres for wildlife refuges and initiate the Migratory Bird Hunting Stamp Act. He also designed the first duck stamp, which sold for a dollar. Over the years, this program has contributed more than a billion (inflation-adjusted) dollars for the purchase of wildlife refuges and wetland habitat throughout the nation. After 20 months on the job, he returned to Des Moines and resumed his vigorous editorial efforts for natural-resource conservation.

In 1936, he convinced President Roosevelt to convene the first North American Wildlife Conference, which lead to the formation of the National Wildlife Federation. He was promptly elected its first president. Darling also played a key role in initiating the Cooperative Fish and Wildlife Research Unit programs at major universities and in the passage of the Federal Aid in Wildlife Restoration Act of 1937.

IOWA NATURAL HISTORY FOUNDATION

Cartoonist and conservationist "Ding" Darling (1876-1962) set in motion the forces that led to the Lewis and Clark Trail Heritage Foundation.

Honoring a dying man's request

Darling retired in 1949. In May of 1961, in failing health, he called an old friend, Sherry Fisher, a fellow member of the Iowa Conservation Commission, and asked him to come to his office. He told Fisher he wanted "to incorporate the Missouri River into a national outdoor recreation and natural resources ribbon along the historic trail of Lewis and Clark." It would be an "avenue for wildlife." Fisher recalled that despite his illness, Darling "was bubbling with excitement over the prospect and looked me in the eye and said 'I can't live to do these things, but I'd like to know if you'd try to do it for me.'" Fisher promised, "I'll try." And indeed he did!

Although there had been numerous, undocumented efforts over the years by individuals and agencies to commemorate the expedition's route across the nation, none were ever implemented. (In 1948, for example, the National Park Service had suggested a "Lewis and Clark Touring Route.")

After Darling's death, in February 1962, Fisher brought together family and friends to discuss the best way to honor him by perpetuating his interest in conservation and implementing his proposal for a Lewis and Clark trail. They formed the Darling Foundation, whose charter trustees included former Presidents Eisenhower and Truman as well as educators, publishers, artists, businessmen, and conservationists.

Udall becomes involved

The foundation's first priority was to arrange a meeting with the Secretary of the Interior, Stewart Udall, and his staff to discuss the concept of a "wildlife and recreational ribbon" following the Lewis and Clark trail from St. Louis to the Pacific Coast. Udall was receptive and suggested that the Darling Foundation obtain endorsements for the concept from the 10 states along the trail.

In October of 1962, at the invitation of the Darling Foundation and the Department of the Interior, representatives from the states met in Portland, Oregon, to discuss the proposal. The following month, a second meeting was held in Omaha, with 67 participants, including representatives from state and federal agencies and conservation and historical organizations. Resolutions were passed to endorse the trail proposal and to ask Congress to approve a plan and establish a formal commission to oversee its implementation.

In the fall of 1963, Congress passed a joint resolution (No. 61) approving a Lewis and Clark trail. In August of 1964, Representatives John Kyle and Ben Jensen of Iowa introduced a bill in the House to establish the Lewis and Clark Trail Commission; Senator Jack Miller, also of Iowa, introduced a similar bill in the Senate. These bills were passed, and by authorization of Public Law 88-630 of the 88th Congress, the Lewis and Clark Trail Commission was

established for a five-year period. The commission comprised 27 persons, including personnel from the federal agencies involved, four Congressmen, the governors of all trail states, and four members of the Darling Foundation.

The commission held its first meeting in Washington, D.C., on January 4, 1965. Sherry Fisher was elected chairman, a position he held throughout the commission's tenure.

Secretary Udall, meanwhile, had already assigned the new Bureau of Outdoor Recreation (B.O.R.) to initiate the trail study. The B.O.R.'s regional offices in Seattle and Denver conducted a comprehensive investigation in cooperation with the state, federal, and tribal agencies involved. Victor Eklund of the Seattle office was appointed to study the four western states of the trail, and I was appointed to handle the six eastern states out of the B.O.R.'s Denver office. Our mandate called for:

- Inventorying and mapping existing and potential historic, archeological, geologic, fish and wildlife, conservation, and recreation resources, including all travel and access routes within 25 miles of the trail.
- Analyzing present and future demands for such resources.
- Determining the need for new recreational developments, improved management practices, and additional access routes.
- Identifying special problems.
- Recommending a plan for development of the trail.

This was a daunting challenge, and we knew that the study's recommendations would provide a road map for the trail's development for years to come. By November of 1963 the study was underway. We "hit the trail" and began interviewing state officials responsible for parks, geology, archaeology, fish and wildlife, highways, and tourism. Ten federal agencies and 12 tribal nations were also involved in the study.

We located existing L&C historic sites, proposed new ones, and recommended designating Lewis and Clark highways on either side of the trail. All


FROM PETER MATTHIESSEN, WILDLIFE IN AMERICA (1987)

Ding Darling's cartoon "The Happy Farmer and His Sportsman Friends" was one of many he drew in the cause of wildlife conservaton. (He was himself an ardent sportsman.)

this (and much more) was contained in a report of 121 pages. It listed 896 sites encompassing nearly 2 million acres suitable for outdoor recreation and proposed the creation of a "conservation and recreation ribbon" along the entire expedition route.

The report took two years of study and review to complete. On September 30, 1965, Secretary Udall forwarded the final version, titled *The Lewis and Clark Trail: A Proposal for Development*, to the Lewis and Clark Trail Commission as it was beginning its second meeting, in St. Louis. In his cover letter, Udall observed, "The Lewis and Clark Expedition did not occur in 1804-06 and then become history, instead, it fired a national spirit of adventure which yet persists."

Foundation member Keith G. Hay is the author of The Lewis and Clark Columbia River Water Trail Guide *and a founding member and former president of the Oregon Chapter. He lives in Newberg, Oregon, and served as vice president of his state's L&C bicentennial committee. Quotations in this article are drawn from documents of the Department of the Interior and the "Ding" Darling Foundation. Part II of the article will appear in the August* WPO.


"the grass begins to Spring.
The weather has been warm...."
From Capt. Clark's remarks for
March 27th, 1804
Celebrate spring 2006 by giving
a friend a membership
in the
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L&C Roundup

Gramentine elected; Williams retires; Bird Woman symposium

Jim Gramentine, founder of the Badger State Chapter of the LCTHF and a resident of Mequon, Wisconsin, has been elected president of the foundation. He will serve the remaining eight months of the office vacated by Patti Thomson of Oconomowoc, Wisconsin, who resigned for health reasons.


Jim Gramentine

Gramentine will oversee the development of an updated strategic plan and the foundation's Third Century Fund. He has been a member of the foundation since 1997 and is a retired secondary-school administrator, teacher, and coach.

Williams bids adieu

Dick Williams, chief of resource management of the Lewis and Clark National Historic Trail, retired last month after 29 years with the National Park Service. In 1991 he was named the first full-time employee of the Lewis and Clark National Historic Trail and played a major role in planning for the L&C Bicentennial. He is largely responsible for developing the Corps II traveling exhibit and the Challenge Cost Share program for the bicentennial, which has dispensed millions of dollars for events and facilities.

Sacagawea confab

Finding Sacagawea: A National Symposium on an American Phenomenon, will take place June 1-4 in Bismarck, North Dakota. Sponsored by the Bismarck-Mandan Lewis & Clark Bicentennial Committee, it will feature Clay S. Jenkinson, Amy Mossett, and other scholars and educators. For details, contact Camie Lies (camie@bismarckmandancyb.com; 1-800-767-3555). ■

Volunteer efforts more crucial than ever as federal support declines

The Lewis and Clark National Historic Trail has enjoyed unprecedented attention throughout the national bicentennial commemoration of the Lewis and Clark Expedition. As the end of the official commemoration nears, it is becoming ever more apparent that the increased support the trail has received from Congress and federal agencies is on the decline.

Funds are needed elsewhere. The war in Iraq persists. Cleanup continues on the devastation caused by Hurricane Katrina. Homeland security remains a fiscal priority. The budgets of the National Park Service and other federal land-management agencies are under attack, and the Lewis and Clark National Historic Trail is no longer a priority in the president's proposed budget for fiscal year 2007.

In some ways, the trail, and the Lewis and Clark Trail Heritage Foundation, will go back to operating in a pre-bicentennial environment. There will be no more bicentennial signature events. Other commemorations will attract the spotlight. We will draw from the same small Challenge Cost Share pools as constituents of the other 23 national scenic and historic trails. (Over the past six years, Congress has appropriated $2.5 million to $5 million annually to a National Park Service Lewis and Clark Challenge Cost Share program.)

In reality, however, we can never go back to the way things were before the bicentennial. That's because the Lewis and Clark Trail had this nation's attention for more than four years. New visitors will continue to make their way along the trail. Conservationists will support protection of treasures along the trail. Every year, more students will discover this part of America's heritage. And enthusiasts will continue to study the expedition and the westward expansion that followed.

Federal agencies will continue to administer and manage the trail with reduced staff and fewer dollars. Communities and organizations will continue to support interpretive signs and site maintenance without Challenge Cost Share grants. The foundation will continue its leadership role along the trail as Keepers of the Story and Stewards of the Trail, but it will have to find new ways to fund its operations when federal support and Challenge Cost Share funding subside.

Foundation volunteers are stepping forward in impressive numbers to assist with trail preservation efforts. In greater numbers than previous years they are monitoring, cleaning up, and maintaining signs, sites, and trail infrastructure through programs sponsored by the foundation. Those efforts will need additional funding to keep operating.

Future funding for the trail and for the foundation's trail stewardship efforts is a critical concern. This public resource, the trail, is our treasure to enjoy. It's also ours to support or abandon, and I know that no one in this organization wants to see it disappear through development or neglect. It's our responsibility to maintain and preserve the trail for future generations so they can interpret, understand, and experience the legacies of the Lewis and Clark Expedition.

There are many ways to get involved in assuring that necessary resources are available for trail preservation and protection. You can urge Congressional support for a federal budget that provides adequate funding for management of the trail. Members can meet with their Congressional delegations or write letters requesting support. Foundation staff can provide information to members on the proposed 2007 budget, what we are requesting in the budget, and how to contact and work with your Congressional delegations. The same type of lobbying can be done at the state level to encourage legislative bodies to support agencies with management responsibilities along the trail.

In recent months, the foundation has been working with a variety of interested parties to request that Congress fund the Lewis and Clark Challenge Cost Share program at $2.5 million in fiscal year 2007. Many of our chapters and members have called or written members of Congress to urge support for this valuable program.

Since 2001, Lewis and Clark Challenge Cost Share recipients have matched $25 million in grants with more than $100 million, including the value of volunteer labor. L&C enthusiasts have demonstrated their commitment to the trail and the stories of the expedition, but their work is not done.

The foundation recently announced its Third Century Campaign to grow the endowment essential for the continuation of our trail stewardship programs. Your contribution to the endowment supports foundation programs that preserve and protect our most valued resources along the trail.

We must count a commitment to the long-term preservation of the trail among the many great legacies of the bicentennial. Otherwise, there will be no special places for future generations to commemorate the tercentennial.

Another important legacy

A U.S. Representative from Pennsylvania has breathed new life into efforts to extend the L&C National Historic Trail east to Philadelphia and Monticello. Congresswoman Melissa Hart is sponsoring H.R. 5053, which would amend the National Trails System Act to extend the trail to include additional sites associated with the preparation and return phases of the expedition.

For information on this federal legislation or on how to contact your Congressional delegation to support it, you can reach me at wraney@lewisandclark.org or 1-888-701-3434.

—Wendy Raney
Director of Field Operations

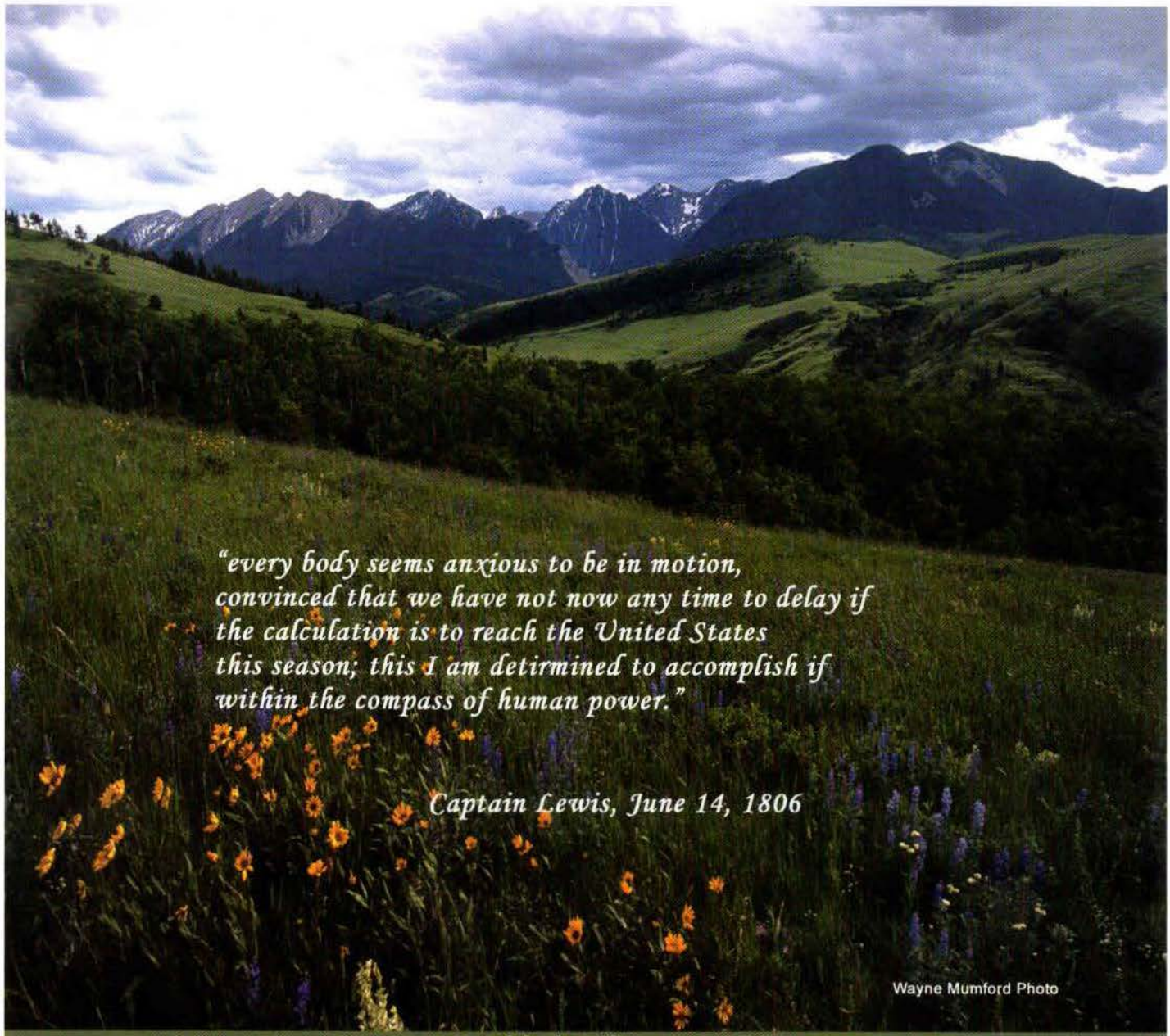

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EXHIBIT CARRICK-6

Chapter One

Down the Ohio

August 31–November 19, 1803

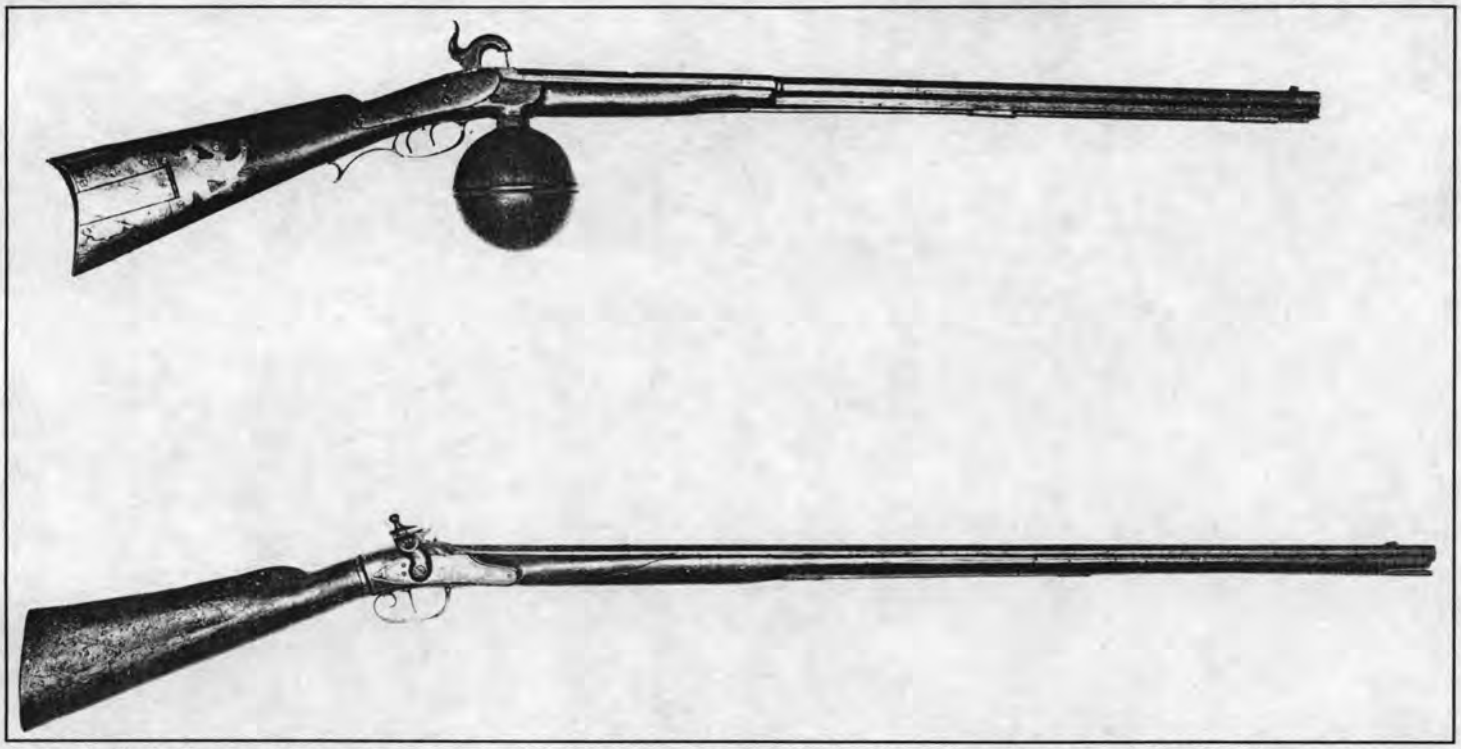
[Lewis] August 30th 1803.[1]

Left Pittsburgh[2] this day at 11 ock with a party of 11 hands 7 of which are soldiers, a pilot and three young men on trial they having proposed to go with me throughout the voyage.[3] Arrived at Bruno's Island[4] 3 miles below halted a few minutes. went on shore and being invited on by some of the gentlemen present to try my *airgun*[5] which I had purchased brought it on shore charged it and fired myself seven times fifty five yards with pretty good success; after which a Mr. Blaze Cenas being unacquainted with the management of the gun suffered her to discharge herself accedentaly the ball passed through the hat of a woman about 40 yards distanc cuting her temple about the fourth of the diameter of the ball; shee feel instantly and the blood gusing from her temple we were all in the greatest consternation supposed she was dead by [but] in a minute she revived to our enespressable satisfaction, and by examination we found the wound by no means mortal or even dangerous; called the hands aboard and proceeded to a ripple of *McKee's rock**[6] where we were obleged to get out all hands and lift the boat[7] over about thirty yards; the river is extreemly low; said to be more so than it has been known for four years; about [*blank*] we passed another ripple near [*erasure*] Past another bear or ripple with more dificulty than either of the others halted for the night much fatiegued after labouring with my men all day—[8] the

EXHIBIT CARRICK-7

Meriwether Lewis' Repeating Air Gun

by Michael F. Carrick, Staff Editor © 2002



At top is the ball-reservoir gun thought to be Lewis's gun as reported in the November 1957 issue of The Gun Report. Bottom is the Lukens air gun thought to have been carried by Meriwether Lewis. This is the Lukens now at VMI. (This was in Wolff pg. 114)
(Both photos are courtesy of the Milwaukee Public Museum)

In this magazine[1], I have previously written about the variety of firearms used during the 1803–1806 trek of the Lewis and Clark expedition. The men had flintlock rifles, muskets, fowlers, fusils, horse pistols, pocket pistols, swivel blunderbusses, a swivel cannon, and, strangely enough, an air gun. Even though air guns of the period were capable of killing small game, and even a deer at 100 yards, Lewis seems to have used his air gun only to "astonish the natives."

During the 2002 Annual Meeting of the Lewis and Clark Trail Heritage Foundation in Louisville, Kentucky, last July, Ludd Trozpek, a rare books dealer, and longtime friend, asked me to explain to him the method of loading Captain Lewis's air rifle.

I explained that the air rifle, made by Isaiah Lukens in Philadelphia, was loaded in a manner similar to the flintlock rifle of the period, except that compressed air rather than gunpowder was the propellant. The Lukens air rifle has a hollow buttstock for an air reservoir. A hand pump, similar to one for a bicycle tire, would be used to pump air into the reservoir. Some 500 to 700 strokes might be necessary to bring it up to the pressure required for an effective shot at 100 yards. Once the butt reservoir was filled, a ball would be inserted at the muzzle of the gun and pushed down the barrel with the ramrod. Then the gun could be cocked and fired. When the trigger was pulled, a short burst of air would be released to fire the ball down the barrel. For the next shot, another ball would be loaded as described above. Each successive shot would be slightly weaker as the air pressure was reduced.

Ludd said that he had some information that indicated that it wasn't done that way at all.

I was skeptical until Ludd showed me a photocopy of an entry dated September 8, 1803 in the journal of one Thomas Rodney. Ludd told me that Rodney had been appointed by Thomas Jefferson to be a territorial judge in the Mississippi Territory, and that Rodney and Lewis had met in Wheeling (now West Virginia) on the Ohio River. Rodney was en route to assume his position in Mississippi, and Lewis was taking the keelboat down the Ohio River from its construction site in Pittsburgh.

On September 8, 1803, Rodney wrote: *"Visited Captain Lewess barge. He shewed us his air gun which fired 22 times at one charge. He shewed us the mode of charging her and then loaded with 12 balls which he intended to fire one at a time; but she by some means lost the whole charge of air at the first fire. He charged her again and then she fired twice. He then found the cause and in some measure prevented the airs escaping, and then she fired seven times; but when in perfect order she fires 22 times in a minute. All the balls are put at once into a short side barrel and are then dropped into the chamber of the gun one at a time by moving a spring; and when the trigger*

is pulled just so much air escapes out of the air bag which forms the britch of the gun as serves for one ball. It is a curious piece of worksmanship not easily described and therefore I omit attempting it."[2]

I was momentarily stunned and speechless. The air gun described by Rodney is not the air gun that historians have accepted for the last twenty-five years. I had in my hand at that moment a large laminated poster of "The Lewis & Clark Expedition Air Rifle" that I had purchased a few minutes earlier from the Army Corps of Engineers display booth. The air rifle illustrated in their poster is not the gun described by Rodney!

It has been an accepted "fact" that Lewis carried a single-shot air rifle made by Isaiah Lukens in Philadelphia, and it is accepted that an example of a Lukens air rifle now in the museum of the Virginia Military Institute (VMI) is most likely the very gun that was carried on the expedition. The air rifle in the VMI museum is a single-shot rifle, not a repeater as described by Rodney. These are two very different guns.

I was familiar with the air gun[3] described by Rodney. He wrote of seeing a gun that can have a dozen or more balls pre-loaded into a tube fixed alongside the barrel of the gun. Once the butt-reservoir was filled with air, it was only necessary for the shooter to push a small sliding metal bar (breech-block) about an inch to the right to have the next ball ready for firing. Lewis truly could have fired all 22 balls mentioned by Rodney in less than a minute. In modern parlance, it would be called a "repeater." A repeating mechanism of that description had been relatively well known in Europe since its introduction by Bartolomeo Girandoni in 1780[4]. More about Girandoni and Lukens will follow below.

My question to Ludd was, "Who was Rodney? Does he have credibility?"

Thomas Rodney

Thomas Rodney fought in the Revolutionary War as a Captain in the Delaware Militia. He saw action in the Battle of Princeton, and as ranking officer in his regiment, achieved the distinction of guarding Washington himself as he moved to winter quarters at Morristown.

Rodney later was appointed a Colonel in the State Militia, was a delegate to the Confederation Congress in 1781, was Speaker of the Delaware House of Representatives, and was appointed as a Justice in the Supreme Court of the State of Delaware. Rodney was the younger brother of Caesar Rodney[5], hero of the Revolutionary War, member of the Continental Congress and signer of the Declaration of Independence.

In July 1803, President Jefferson appointed Rodney as a Mississippi territorial judge and as a land commis-

Philadelphia Gunsmith Isaiah Lukens

CATALOGUE

OF

TOWN CLOCKS,

GOLD CHRONOMETERS,

NAUTICAL, PHILOSOPHICAL AND CHEMICAL INSTRUMENTS,

TURNING LATHES,

STEAM, CUTTING, AND DIVIDING ENGINES,

Tools, Air Guns, Curiosities, Library, Medals, Cabinet of Minerals, [illegible] Gauges, Stocks and Dies, &c. &c.

BELONGING TO THE ESTATE OF THE LATE

ISAIAH LUKENS, DEC'D.

TO BE SOLD AT AUCTION,

By order of [illegible].

ON MONDAY, JANUARY 4th, 1847,

AT THE [illegible] CORNER OF [illegible] AND [illegible] STREETS,

PHILADELPHIA.

[illegible] Sale to commence at 10 o'clock, A. M. [illegible]

W. S. [illegible] & J. S. [illegible], AUCTIONEERS,

No. [illegible] Street.

[illegible] The Goods can be examined on and after December [illegible],

CONDITIONS OF SALE.

Cash upon delivery of the Goods—which are to be removed immediately after the Sale—[illegible] the Town Clocks [illegible] 30 per cent. will be required to be paid [illegible] the Balance within [illegible] days from the day of Sale. [illegible] taken good care of during that time.

[illegible] All bills must be paid in [illegible] Funds.

8

67. 1 Box for small Tools
68. 1 Mahogany Box and Steel Ware
69. 1 Mariner's Compass
70. 1 Box, and [illegible]
71. 1 Machine for [illegible] the [illegible] of the [illegible]
72. Mahogany Vial Case, and Vials
73. Box and contents
74. Mahogany Box and Spirit [illegible] Pipe
75. Second hand [illegible]
76. 1 Machine for ascertaining Specific Gravities. Mahogany case and weights
77. 1 fine Sextant, extra tubes, complete
78. 1 superior [illegible] silver [illegible] telescopic and [illegible] sights, &c., with mahogany case. Made by Isaiah Lukens for his own [illegible]
79. 1 Air Cane Gun, complete
80. 1 do do
81. 1 do do
82. 1 do do
83. 1 do do
84. 1 do do
85. 1 do do
86. 1 do do
87. 1 do do
88. 1 do do
89. 1 do do
90. 1 do do
91. 1 Walking Cane, [illegible] head
92. 1 " ivory head. This is a very curious article of his own construction, particulars and explanation [illegible]
93. 1 large Air Gun, in order
94. 1 small do do
95. 1 large do made [illegible], and used by Messrs Lewis & Clark in their exploring expeditions. A great curiosity.
96. Contents in Window
97. 6 Boxes for Air Canes
98. 1 very large Telescope and Case. In complete order
99. 1 Revolving Pistol, English
100. 1 [illegible] Barometer
101. [illegible] do do
102. Box and Stamps
103. " of Fishing Apparatus
104. " and contents
105. Box of Cast Steel

Copy of the 1847 catalog of the estate of Isaiah Lukens

sioner for the district of the territory west of the Pearl River. It was for this appointment that 59-year old Thomas Rodney was traveling west when he encountered Meriwether Lewis on the Ohio River near Wheeling.

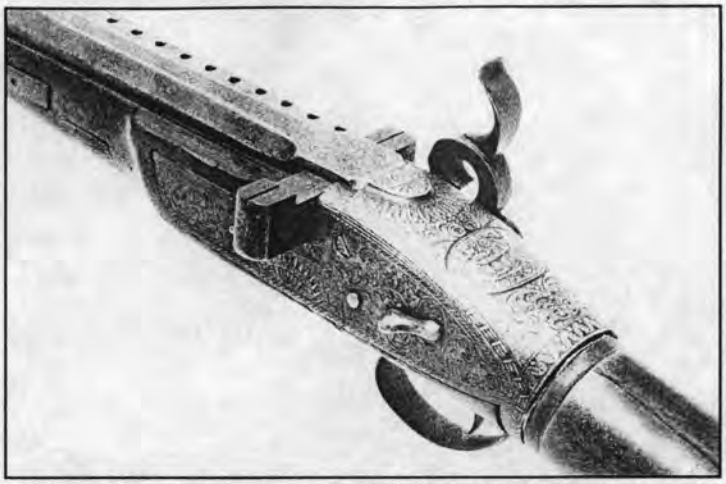
Rodney wrote of meeting Lewis on September 7th, and spending time with him and seeing the air gun demonstration on September 8th. They dined together that evening, and discussed the air gun, the portable iron boat, and then shared watermelons[7]. On the 9th, Rodney wrote, "*. . . went down and took a parting drink and part of a water mellon on board his boat and then bid him adieu and stayed on shore to see him depart, and I waited till I saw him over the first ripple.*"[8]

In the journals of the expedition, Lewis mentions meeting Rodney on the 7th of September. On September 8th Lewis wrote, "*. . . dined with Colo. Rodney and his suit, in the evening they walked down to my boat and partook of some watermellons.*"[9]

The Lukens Single-Shot Air Rifle

Few details are known of the air gun carried by Lewis, since he wrote nothing in the journals about the mechanism or the operation. Rodney's words are the first to come to light on the specifics of Lewis's air gun.

Air guns must have a reservoir to hold the compressed air used to fire the ball. These reservoirs would be filled by pumping air in with a pump that resembles today's bicycle pump. Airguns of the period could be pumped to over 500 pounds per square inch



Two close-up views of a Girandoni-type air gun. The perforated tube in the left photo (and seen partially in the right photo) is the magazine. The long spring is in a closed position, flush with the magazine, and it is holding the sliding breechblock in the firing position.
(Photos courtesy of Larry Hannusch)

(psi)[10]. For comparison, today's automobile tire has about 30 to 40 psi pressure.

Air guns of Lewis's day could be had with the buttstock as the air reservoir, or a hollow sphere (about the size of a grapefruit) hanging under the barrel or perched above it for an air reservoir, or the barrel of the gun could be inside a hollow outer shell that contained the air.

In 1956, pioneer air gun collector, G. Charter Harrison, Jr., suggested a single-shot Lukens air rifle with a butt reservoir as a candidate for the one carried by Lewis.[11] In 1957 Harrison changed his mind[12] and proposed that the Lewis air gun was one having a spherical chamber fastened in front of the triggerguard.[13]

In 1976, noted air gun collector, Henry M. Stewart, presented a paper to the American Society of Arms Collectors at their October meeting in Valley Forge, PA. He had suspected that the Lukens-style air gun might have been the one used by Lewis. He researched Isaiah Lukens and discovered, in The Franklin Institute of Philadelphia, a copy of the catalog of the estate sale of Isaiah Lukens. This 1847 document listed many scientific items from this prolific instrument maker and clocksmith. Lukens made the clock in the tower of Independence Hall, chronometers, nautical instruments, air canes and air guns among many other scientific apparatus.

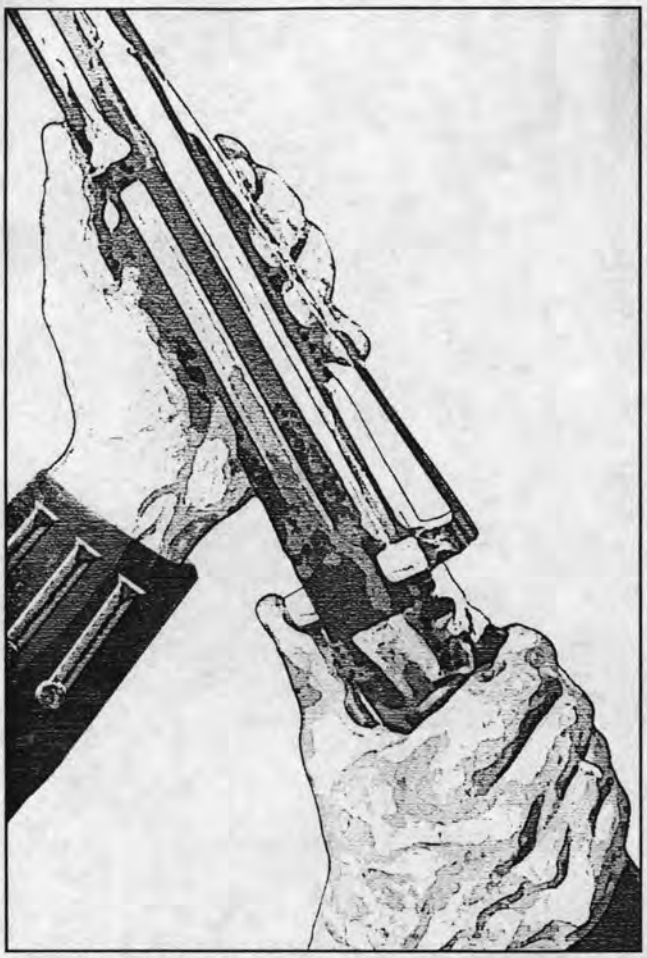
Item No. 95 in the catalog of the estate sale is described as "1 large [air gun] made for, and used by Messrs Lewis & Clark in their exploring expeditions. *A great curiosity*." Stewart had air guns in his collection made by Isaiah Lukens, and he was quite sure that one of them, or one like them, must have been the air gun on the expedition.[14]

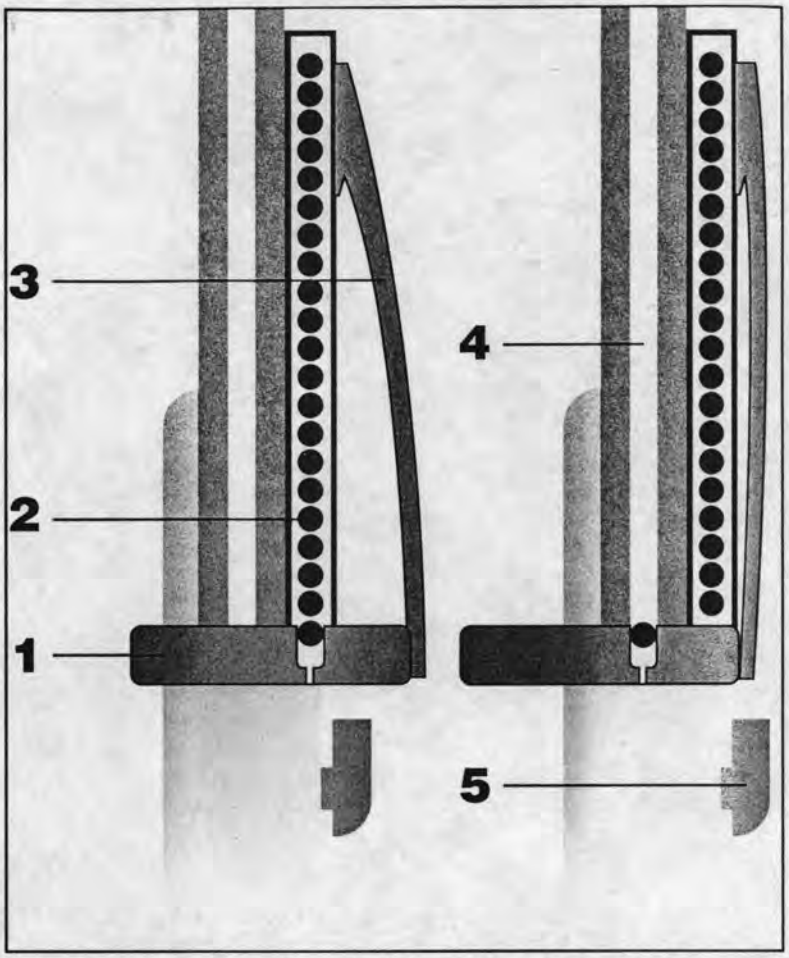
One of the Lukens air rifles in Stewart's collection has been assumed to be the one carried on the expedition because of repairs to the gun that seem similar to repairs that Lewis mentioned as having been done by John Shields, the gunsmith on the expedition.[15 16]

After his death in 1988, Henry Stewart left his large collection of firearms to his alma mater, Virginia Military Institute in Lexington, VA. His Lukens air rifles are in the museum on campus.

Girandoni-Style Repeating Air Guns

In the latter part of the 18th century, Bartolomeo Girandoni designed and manufactured butt-reservoir, breech-loading, tube-fed, repeating air rifles in his Vienna shop for the Austrian army. He received a contract for 500 air guns





Breechblock (1) is pushed to right and a ball from the tube magazine (2) drops into the cavity. The leftward pressure of the spring (3) returns the breechblock to alignment with the bore (4). After cocking the hammer (5), the gun is ready to fire. The illustration to the left shows the shooter pushing the breechblock to the right to load a ball.

in 1780 and an additional 700 in 1785. More smaller orders followed, and eventually about 1500 rifles, most with two extra butt reservoirs, were in use by the Austrian army.[17]

An instruction booklet printed in 1788 for Austrian troops during the war with Turkey gives the following specifications (converted to our system of measurement): Caliber .51"; weight loaded 9 lbs, 5 oz.; overall length 48-1/2"; length of octagonal barrel 33"; forestock of walnut; butt air reservoir made of two forged sheet iron halves joined by eleven rivets and brazed all around for a hermetic seal, and then covered with leather.[18]

The operation of a Girandoni-system air gun is as follows: After filling the reservoir with air from a hand pump, and loading twenty or so balls in the tube fixed alongside the barrel, the gun would be held with the muzzle upwards. A rectangular bar of steel with a chamber for one ball slides from side to side across the lower end of the barrel. The bar is held in firing position (all the way to the left) by the pressure of a long leaf spring on the right side of the ball tube. When the bar is pushed to the right, against the pressure of the spring, a ball drops from the tube into the empty chamber. Releasing the push returns the bar to the left side, and the ball is aligned with the bore of the barrel. Cocking the gun and pulling the trigger releases a burst of air that shoots the ball down the barrel. Pushing the bar to the right quickly loads another ball. Fred Baer, who studied original documents in the Vienna Historical Museum, wrote that "Original documents indicate 2000 pump strokes were required to fill the buttstock air container [of the Girandoni]. Pressure inside the con-

tainer was estimated to be 365 to 440 psi. This was reportedly sufficient to assure 120 yards effective range for the first ten shots, 100 yards for the second ten, and 80 yards for the last ten shots."[19]

The above-described operation of the Girandoni System closely matches Thomas Rodney's description of Lewis's gun: "*All the balls are put in at once into a short side barrel and are then dropped into the chamber of the gun one at a time by moving a spring; and when the trigger is pulled just so much air escapes out of the air bag . . . as serves for one ball.*"[20]

Did Lewis Have a Girandoni-System Air Gun?

Rodney wrote an on-the-scene description of Lewis's gun. It clearly is a mechanism similar to Girandoni's—it is not a single-shot, muzzle-loading air gun as represented by the Lukens air rifle described in most recent publications about the expedition.

Rodney's journal description of his two days with Lewis meshes with Lewis's journal entries of his meeting with Rodney. Rodney knew guns: he was a veteran of the Revolutionary War and a Colonel in the State Militia. In his journals there are several references to hunting, and as recently as the day before he met Lewis, he purchased shot and powder for his gun. It is apparent Rodney was familiar with the single-shot guns of the day.[21]

Many private gunmakers in Europe made copies and variations of the Girandoni system. Noted air gun historian, Dr. Robert Beeman, has written, "The receivers of the Lukens and Kunz[22] air rifles are brass or bronze. The shape and style of these receivers are very similar to receivers on Girandoni-style Austrian butt-reservoir air rifles in the Beeman airgun collection. Such a styling had already made its way to England with Staudenmayer by at least 1805, so it is reasonable that this style could have found its way to America by the end of the 1700s. The butt reservoir construction and the style of the receivers suggest that the Lukens air rifle designs, followed by those of the Kunz air rifles, stemmed from Austrian designs, perhaps via immigrants from Austria or even England."[23] In this passage Dr. Beeman is specifically referring to the receivers of the guns in question, but it follows that any part or all of the Girandoni system could be copied.[24]

It may be significant that Rodney refers to the butt reservoir of Lewis's gun as "*. . . the air bag which forms the britch . . . .*"[25] By "bag" I believe he means the butt reservoir.[26] You will note in the illustration of the Girandoni gun, that the butt reservoir is cone-shaped with a convex end. The word "bag" may be describing this shape. There were powder flasks cased with London Colt revolvers that had a similar shape, and they are called "bag flasks." Small flintlock pistols of the period are known with bulbous grips, and they are referred to as "bag-shape grips." It is not clear whether Rodney is describing the shape of the air reservoir or is using the word "bag" as a synonym for "container" of the air.

Several previous studies of Lewis's air gun state that the air gun is mentioned sixteen to nineteen times in the journals.[27] [28] [29] Earlier researchers did not have the benefit of the outstanding efforts of the most recent editor of the Journals—Gary E. Moulton. Moulton's thirteen-volume edition of the Journals includes virtually all known copies, rough copies, field notes, and even scraps of paper associated with the original writings. Moulton lists thirty-nine references to the air gun. Some are obviously one writer copying from the other, or one writer later refining his notes. But little bits of evidence can sometimes be gleaned from these slight variations.

Everyone who has read the journals is familiar with the phrase, "astonished the nativs" with the air gun. I have often wondered why the Indians would be so "astonished." Certainly with the single-shot Lukens air rifle there would have been no gunpowder and no smoke. The sound would not have been as loud as the familiar musket. But otherwise the Lukens was loaded, rammed, and cocked in a manner the Indians would have been familiar with. But, a rapid-fire, repeating, smokeless gun would astonish almost anyone in North America in the 1800s.

Assuming Lewis had a tube-fed, breech-loading, repeating air gun makes one more alert to nuances in the wording of the entries. For me, the strongest evidence of a repeating gun is in Lewis's entry of January 24, 1806: "My Air-gun also astonishes them very much, they cannot comprehend it's shooting so often and without powder; and think that it is great medicine. . .

."[30] The key words are "shooting so often."

On August 30, 1804, Clark wrote, ". . . the air gun astonished them verry much."[31] But, Joseph Whitehouse (a Private on the expedition who also kept a journal) was apparently more impressed. On the same day, Whitehouse wrote, "They all stood amazed at this curiosity; Captain Lewis discharged the Air Gun several times, and the Indians ran hastily to see the holes that the Balls had made which was discharged from it. at finding the Balls had entered the Tree, they shouted a loud at the sight and the Execution that was done surprized them exceedingly."[32]

This paragraph makes more sense if you imagine Lewis rapidly firing six or eight shots just by pushing the chamber bar to the right as fast as he could cock the hammer and pull the trigger. With the single-shot Lukens, he would have had to dismount the gun, place a ball in the muzzle, ram it down with the ramrod, raise and cock the gun and fire. Rodney wrote that Lewis told him he could fire twenty-two shots in a minute. Now that would "astonish" the Indians!

Even the accidental shooting of a bystander by Blaze Cenas one year earlier is more understandable when a repeating air gun is considered. On the day that Lewis departed from Pittsburgh on his keelboat, he stopped after three miles and went ashore to talk to some bystanders. He demon-

AIR GUN CITATIONS IN LEWIS & CLARK JOURNALS

August 30,1803 Lewis
". . . went on shore and being invited on by some of the gentlemen present to try my airgun which I had purchased brought it on shore charged it and fired myself seven times fifty five yards with pretty good success; after which a Mr. Blaze Cenas being unacquainted with the management of the gun suffered her to discharge herself accedentaly the ball passed through the hat of a woman about 40 yards distanc cuting her temple about the fourth of the diameter of the ball; shee feel instantly and the blood gusing from her temple we were all in the greatest consternation. supposed she was dead by [but] in a minute she revived to our enespressable satisfaction, and by examination we found the wound by no means mortal or even dangerous. . . ."Vol 2, pg 65

August 3,1804 Clark
". . . after Cap Lewis Shot his air gun a few times which astonished the nativs, we Set Sail." Vol 2, pg 439

August 3,1804 Clark
"after Capt. Lewis's Shooting the air gun a fiew Shots (which astonished those nativs) we Set out. . . ."Vol. 2, pg 441

August 19, 1804 Clark
". . . they were much Surprised at the air gun and Several curiosities. . . ." Vol 2, pg 492

August 19, 1804 Clark
". . . we Showed them many Curiosities and the air gun which they were much
asstonished at." Vol 2, pg 493

August 30,1804 Clark
". . . the air gun astonished them verry much. . . " Vol 3, pg 24

October 10, 1804 Clark
". . . after the Council was over we Shot the Air gun, which astonished them. . . ." Vol 3, pg 156

October 10, 1804 Clark
". . .after the Council was Over we Shot the air guns (sic) which astonished them much,. . ." Vol 3, pg 157

October 10, 1804 Lewis (from his weather diary)
". . . shot my airgun. . . ." Vol 3, pg 221

October 29, 1804 Clark
"Shot the air gun which both Surprised and astonished the nativs,. . ." Vol 3, pg 209

October 29, 1804 Clark
". . .we Shot the Air gun which appeared to assonish the nativs much,. . ." Vol 3, pg 210

October 30, 1804 Clark
"we Smoked and after my Shooting the air gun he departed,. . ." Vol 3, pg 216

January 16,1805 Clark
"we Shot the Air gun, and gave two Shots with the Cannon which pleased them verry much,. . ." Vol 3, pg 275

June 9,1805 Lewis
". . . it was necessary to repare some of our arms, and particularly my Airgun the main spring of which was broken, before we left this place." Vol 4, pg 271

June 10, 1805 Lewis
"Shields renewed the main Spring of my air gun we have been much indebted to the ingenuity of this man on many occasions;" Vol 4, pg 275

August 7,1805 Lewis
"my air gun was out of order and her sights had been removed by some accedent I put her in order and regulated her. She shot again as well as she ever did." Vol 5, pg 55

August 17,1805 Lewis
"I also shot my air-gun which was so perfectly incomprehensible that they immediately denominated it the great medicine." Vol 5, pg 112

strated his air gun, and one of the men on shore, Blaze Cenas, apparently asked to handle it. Somehow the gun discharged when Cenas had it, and the ball struck a woman standing about forty yards distant who fell to the ground with blood gushing from her temple. She was not seriously injured and quickly recovered. Lewis wrote that Cenas was "unacquainted with the management of the gun."[33] Undoubtedly, every man living along the Ohio River would have been familiar with the flintlock single-shot rifle of the period. A repeating mechanism, push-to-load, tube-feed air gun would certainly be something that Cenas would have been unacquainted with. In the same paragraph, Lewis wrote that, prior to handing it to Cenas, he had fired it seven times at fifty-five yards with pretty good success. That could be interpreted as seven rapid shots.

If Lewis did have a Girandoni-type air rifle, where did it come from?

I believe that the gun could have come from the shop of Isaiah Lukens. The catalog of the estate of Lukens (see illustration) specifically states the air gun was "made for"[34] Lewis. Lukens could well have had a Girandoni-System European air gun in stock, but I think it more likely that Lukens had made one on the Girandoni principle. Girandoni himself was a clockmaker as was Lukens. Reading of the scope of Lukens' work, there is no doubt in my mind that Lukens could have made such a gun, and that it would not be nearly so difficult as making the scientific instruments that were listed in the estate sale.

Lukens may have read about the mechanism and seen diagrams of the Girandoni system in scientific papers of the day or in military journals. Some traveler may have shown one to him. The Austrian army fought against the French in 1792–1797, and one Austrian government report September 21, 1799, lists 308 air rifles missing. Another Austrian government report of January 20, 1801 states that 399 Girandoni air rifles were lost in battle.[35]

The listing of the gun in Lukens' estate sale is different from all of the other air guns listed. In addition to saying it was the gun Lewis and Clark took, it is most significantly described as "*A Great Curiosity*." The italics are in the original. The other air guns and air canes must have been curiosities in that era. To single out this gun, and to write "A Great Curiosity" in italics should indicate that it was something quite unusual.

Thomas Rodney's contemporaneous description of Meriwether Lewis's air gun seems to me to be beyond doubt. I believe that he accurately described the mechanism that he had seen. Rodney's journal of his travel to Mississippi is filled with detailed observations of a man who had a keen interest in almost everything that he encountered. He described the construction of a floating mill he encountered on the Ohio River,[36] he described the geology of fossil beds,[37] and he described Lewis's keelboat and observed that with its draft of 2-1/2 feet, Lewis would have much difficulty reaching the Mississippi River.[38]

We may wonder, why did not Lewis mention that his air gun was a repeater? Lewis wrote very little about the technical details of his firearms. He also did not mention whether the air gun had a butt reservoir or a sphere reservoir, or how many times it needed to be pumped, or the caliber, or if it were rifled. The most information we have is from an interested observer—Rodney.

Rodney's journal provides the clue to explain the "astonishment" with which the Indians viewed Lewis's air gun. It was not simply the use of air rather than gunpowder; it was the repeating mechanism which allowed the gun to be fired, as Lewis said, "so often". A gun that could fire twenty shots a minute by no action other than cocking the hammer and pulling the trigger would appear a formidable weapon—great medicine—to the Indians, and "*a great curiosity*" or "curious piece of workmanship" to others, such as Thomas Rodney, who encountered it along the way.

In view of the eyewitness description by Thomas Rodney, the question of where Lewis's air gun is today, or whether it even still exists, must remain open.

1. *The Gun Report*, June 2002, p. 8

2. Smith, Dwight L. and Ray Swick, eds, *A Journey through the West-Thomas Rodney's 1803 Journal from Delaware to the Mississippi Territory*, Athens, OH: Ohio University Press, 1997, p. 50. He met up again with Lewis at Louisville on October 17th, "In the evening Captain Lewis and his companion Captain Clark, son of Genl. Clark [Rodney's error], called at our boat to see us and took a glass of wine with us and bid us adieu." p. 124

3. I use the term "air rifle" when writing of the Lukens air rifle thought to have been on the expedition. It has a rifled bore, and is, therefore, a "rifle." But I do not know if the repeating gun that Rodney describes was rifled or smoothbore, so I refer to it as an "air gun" which includes both rifled and smoothbore guns. The "air gun" is mentioned thirty-nine times in the journals. It is never called an "air rifle" by Lewis or the other journalists. It is always an "air gun."

4. Girandoni was not the first to make repeating air guns, but he was the first to make them by the hundreds. Repeating air guns were known in England by the 1730s. In addition to his military contract, Girandoni also made civilian guns.

5. Caesar Rodney is featured on the State of Delaware coin in the U.S. Mint's Commorative Quarters series.

6. Smith and Swick, pp. 5-8.

7. Smith and Swick, pp. 50-53. Rodney also mentions the dimensions of the keelboat, its draft, and its cost—$400.

8. Smith and Swick, p. 53

9. Moulton, Gary E., ed., *The Journals of the Lewis and Clark Expedition*, 13 vols., Lincoln, NE: University of Nebraska Press, 1983-2001, Vol. 2, pp. 73-75

10. Konwiarz, Christian, "Test Firing A 150 Year Old Air Rifle," *The Gun Report*, August 1983, p. 19

11. Harrison, G. Charter, Jr., "The Lewis and Clark Air Gun," *The Gun Report*, May 1956, p. 6

12. Harrison had found a very early, American-made, ball-reservoir air gun with repairs to it that he thought were consistent with those by the expeditions gunsmith, John Shields. Early researchers had no clues to the type of air gun on the expedition until 1976 when Stewart found the mention of Lewis's air gun in the Lukens auction. In retrospect, it was an assumption that the gun was a single-shot rifle—an incorrect assumption.

13. Harrison, G. Charter, Jr., "Re-Inquiry Into the Lewis and Clark Air Gun," *The Gun Report*, November 1957, p. 14

14. Stewart, Henry, "The American Air Gun School of 1800-1830," Bulletin Number Thirty-Five of The American Society of Arms Collectors, Valley Forge, PA, 1976, p. 33

15. Moulton, Vol 4, p. 271, ". . . it was necessary to repare some of our arms, and particularly my Airgun the main spring of which was broken,"

16. On April 8, 1806, Clark wrote, "the party ows much to the injenuity of this man [John Shields], by whome their guns are repared when they get out of order which is very often." Moulton, Vol 7, p. 95

17. Fred Baer, "Napoleon Was *Not* Afraid of It," Held, Robert, ed., *Arms and Armor Annual*, Northfield, IL: Digest Books, 1973, p. 253

18. Fred Baer, "Napoleon Was *Not* Afraid of It," Held, Robert, ed., *Arms and Armor Annual*, Northfield, IL: Digest Books, 1973, p. 250

19 Baer, F.H., "The Air Rifle that Went to War", *American Rifleman*, December 1967, p. 32

20 Smith and Swick, p. 50

21. Smith and Swick, Rodney wrote of hunting, cleaning his gun, making balls, etc., in many entries, e.g., pp. 39, 50, 81, 89, 99, 109, 118, 120.

22. Kunz worked with or for Lukens. There are two Lukens and six Kunz air guns in the collection Stewart left to the VMI museum. Beeman reports that two of the Lukens and two of the Kunz are "almost identical." Beeman p. 15

23. Beeman, Robert D., Ph.D., "Proceeding on to the Lewis & Clark airgun", Airgun Review # 6, Ellicott City, MD, 2000, p. 13

24. Wolff, Eldon G. Air Guns, Milwaukee, WI: Milwaukee Public Museum, 1958, p.86, Wolff states, "The Girandoni breech is found not only on air guns bearing that name, but also on a number of others, the following have been examined: Fruwirth, Oesterleins, Staudenmayer, Contriner, and Lowentz."

25. Smith, Dwight L. and Ray Swick, eds, *A Journey through the West-Thomas Rodney's 1803 Journal from Delaware to the Mississippi Territory*, Athens, OH: Ohio University Press, 1997, p. 50

26. I assume Rodney means "breech" when he writes "britch." "Breech" has a general meaning of "bottom." But if Rodney is choosing his words carefully in referring to the "breech" of the gun, that would be the area at the bottom of the barrel. In that case, perhaps there was a spherical ball-reservoir mounted below the breech. I think if that were the case, he would not have referred to it as a "bag." Wolff, p. 92, states that there is only one example known of a ball- reservoir air gun with a system resembling the Girandoni repeater.

27. Chatters, Roy M., "The Not-So-Enigmatic Lewis and Clark Airgun," We Proceeded On, Vol 3, No. 2, May 1977, Editor's Note p.6

28. Nelson, Ray, "The Lewis & Clark Expedition Air Rifle" Ironton, MN: author, 2000, p. 6

29. Halsey, Ashley, Jr., "The Air Gun of the Lewis & Clark," *The American Rifleman*, August 1984, p. 37

30. Moulton, Vol 6, p. 233

31. Moulton, Vol 3, p. 24

32. Moulton, Vol 11, p. 66

33. Moulton, Vol 2, p. 65 The ball apparently creased the skin across the forehead but did not penetrate.

34. This claim was written 44 years after the fact-something to bear in mind.

35. "Napoleon Was *Not* Afraid of It," Held, Robert, ed., *Arms and Armor Annual*, Northfield, IL: Digest Books, 1973, p. 256. It is not clear whether 308 plus 399 guns were lost, or whether the 308 are included in the figure of 399.

36. Smith and Swick, p. 76

37. Smith and Swick, p. 80

38. Smith and Swick, p. 50

Notes:

A. The author wishes to thank Ludd Trozpek and Jay Rasmussen for the invaluable assistance they have provided.

B. A shorter version of this paper was published in the November 2002 issue of WE PROCEEDED ON, the quarterly journal of the Lewis and Clark Trail Heritage Foundation.

Reference:

Moulton, Gary E. ed., *The Journals of the Lewis and Clark Expedition*, 13 vols., Lincoln, NE: University of Nebraska Press, 1983-2001 ◉